Supreme Court, U.S.
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NO.
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IN THE

SUPREME COURT of the UNITED STATES

OCTOBER TERM, 1993

JAMES CITY COUNTY, VIRGINIA,
Petitioner,

v.

U. S. ENVIRONMENTAL PROTECTION AGENCY AND
U. S. ARMY CORPS OF ENGINEERS,
Respondents.

Petition for Writ of Certiorari
to the United States Court of Appeals
for the Fourth Circuit

PETITION FOR WRIT OF CERTIORARI

WILLIAM B. ELLIS
Counsel of Record
McSweeney, Burtch & Crump
Post Office Box 1463
11 South Twelfth Street
Richmond, Va. 23212
(804) 783-6805

FRANK M. MORTON, III
County Attorney
James City County
101 Mounts Bay Road
Post Office Box JC
Williamsburg, Va. 23187
(804) 235-6612

Attorneys for Petitioner James City County, Virginia

303 pp

QUESTIONS PRESENTED

1. Whether the Environmental Protection Agency, having long interpreted § 404(c) of the Clean Water Act to require consideration of whether a "practicable" alternative to a project is or is not available, may ban construction of a public water supply reservoir without ever considering a final judicial determination that no "practicable" alternative exists?

2. Whether the Environmental Protection Agency's finding that placing fill for the Ware Creek Reservoir would cause "unacceptable" effects is entitled to undiminished deference notwithstanding that: (a) the Agency's original finding was judicially invalidated as wholly without record support, (b) the Agency quickly reached the same result on remand without any important change in the administrative record, and (c) the Agency's finding is contradicted by those of other federal and state agencies sharing similar authority under the same statute to ban Reservoir construction for the same reasons?

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U. S. ENVIRONMENTAL PROTECTION AGENCY AND

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Respondents.

PETITION FOR WRIT OF CERTIORARI

James City County, Virginia petitions for a writ of certiorari to review the second judgment of the United States Court of Appeals for the Fourth Circuit in this case. That decision reversed the United States District Court for the Eastern District of Virginia and effectively reinstated the Environmental Protection Agency's prohibition of placing fill for construction of the Ware Creek Reservoir, a municipal reservoir needed as the principal source of drinking water for the citizens of James City and New Kent Counties, Virginia.

PRIOR OPINIONS

Decisions of the United States Army Corps of Engineers to grant a permit to place fill for the Ware Creek Reservoir, dated July 11, 1988, are in Appendices A and B.

The decision of Virginia's State Water Control Board certifying that the Reservoir will comply with all applicable environmental laws and regulations, dated December 22, 1988, is in Appendix C.

The original "Final Determination" of the Environmental Protection Agency ("EPA") to prohibit placement of fill for the Reservoir, dated July 10, 1989, is in Appendix D.

The decision of the United States District Court for the Eastern District of Virginia invalidating EPA's original prohibition, dated November 6, 1990, is in Appendix E. This opinion is reported at 758 F. Supp. 348 (E.D. Va. 1990).

The decision of the Fourth Circuit affirming the District Court but remanding to EPA, dated January 29, 1992, is in Appendix F. It is reported at 955 F.2d 254 (4th Cir. 1992).

EPA's "Final Determination On Remand," which prohibited the placement of fill for the Reservoir a second time, is dated March 27, 1992, and is in Appendix G.

The second decision of the District Court invalidating EPA's action on remand, dated August 4, 1992, is in Appendix H. It is reported at 23 Envtl. L. Rep. 20,228 (E.D. Va. 1992).

The decision of the Fourth Circuit reversing the District Court, dated December 30, 1993, is in Appendix I. This opinion is reported at 12 F.3d 1330 (4th Cir. 1993).

The order of the Fourth Circuit denying the Petition of James City County for Rehearing and Suggestion for Rehearing In Banc, dated March 25, 1994, is in Appendix J.

JURISDICTION

The judgment of the Fourth Circuit was entered December 30, 1993. The County's Petition for Rehearing and Suggestion for Rehearing In Banc was denied on March 25, 1994. The

Court's jurisdiction is invoked pursuant to 28 U.S.C. § 1254.

STATUTES AND REGULATIONS INVOLVED

Sections 301(a), 401(a)(1), and 404(a)-(d) of the Clean Water Act, also known as the Federal Water Pollution Control Act, 33 U.S.C. §§ 1311(a), 1341(a)(1) and 1344(a)-(d), are reproduced in Appendix K.

Regulations promulgated by EPA governing the prohibition of discharges pursuant to § 404(c) of the Clean Water Act are published at 40 C.F.R. § 231 (1993), 44 Fed. Reg. 58,076 (1979).

Guidelines promulgated by EPA in conjunction with the Corps of Engineers pursuant to § 404(b)(1) of the Clean Water Act governing the issuance of permits for the discharge of dredged or fill material are published at 40 C.F.R. § 230 (1993), 45 Fed. Reg. 85,336 (1980).

STATEMENT OF THE CASE

This case concerns the second attempt by EPA to override decisions of the Corps of Engineers and Virginia's State Water Control Board ("SWCB") to permit James City County, Virginia to place fill in constructing the Ware Creek Reservoir. EPA's original prohibition was set aside by the District Court, exercising jurisdiction under 28 U.S.C. §§ 1331 and 2201. The Fourth Circuit affirmed that result. On remand, EPA again banned the placement of fill. The District Court invalidated this second prohibition, too. But on December 30, 1993, the Fourth Circuit reversed and effectively reinstated EPA's prohibition. James City County seeks review of that decision.

The Regulatory Program

The Corps is authorized by § 404(a) of the Clean Water Act (App. K-2) to issue permits for the discharge of fill to waters of

the United States. However, it may only issue a permit if the state agency responsible for water quality certifies or waives certification under § 401 (App. K-1) that all applicable laws and regulations governing water quality will be satisfied. Under § 404(c) (App. K-3) EPA may prohibit discharges of particular materials to specified areas if "the discharge of such materials into such area will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas . . ., wildlife, or recreational areas."

EPA adopted regulations implementing § 404(c) in 1979. They require that "[i]n evaluating the unacceptability of such impacts, consideration should be given to the relevant portions of the section 404(b)(1) guidelines (40 C.F.R. Part 230)." 40 C.F.R. § 231.2(e), 44 Fed. Reg. 58,076, 58,083 (1979). The preamble to these regulations provides that the "relevant portions" of the guidelines include evaluation of whether a "practicable," less-damaging alternative project is or is not available to the permit applicant:

> [T]hose portions of the guidelines relating to alternative sites may be considered in evaluating the unacceptability of the environmental impact. For example, the Administrator can take into account the fact that the alternative sites or methods are or are not available, so that the loss of resources is avoidable or unavoidable.[1]

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[1] 44 Fed. Reg. 58,076, 58,078 (1979). To be "available," an alternative must be "available to the permit applicant." Final Determination of the Assistant Administrator for External Affairs Concerning the Sweedens Swamp Site in Attleboro, Massachusetts Pursuant to Section 404(c) of the Clean Water Act (May 13, 1986) at 20; *Friends of the Earth v. Hintz*, 800 F.2d 822, 833-34 (9th Cir. 1986); *Louisiana Wildlife Fed'n, Inc. v. York*, 761 F.2d 1044, 1048 (5th Cir. 1985) (the analysis of alternatives pursuant to the § 404(b)(1) guidelines must take into account the objectives of the permit applicant).

Whether a less-damaging, practicable alternative is available is to be determined as of the time the permit applicant "enters the market" for his proposed activity. *Bersani v. Robichaud*, 850 F.2d 36, 44 (2d Cir. 1988), *cert. denied* 489 U.S. 1089 (1989).

When no such alternative is available, EPA may still ban the discharge but it must make a greater showing of harm to bear its burden of proving that the effects are "unacceptable." "[W]hen there is no alternative available, and 'vetoing' the site means stopping the project entirely, the loss of the 404(c) resources may still be *so great* as to be 'unacceptable.'"[2] EPA regulations further provide that "the Administrator will take into account all information available to him. . . ." 40 C.F.R. § 231.1(a), 44 Fed. Reg. 58,076, 58,083 (1979).

Background

A. Water Supply Planning

James City County is located in Virginia's low-lying coastal plain on a peninsula between two tidal, brackish water bodies: the James River and the York River. It is between two of the largest metropolitan areas in Virginia, Hampton Roads to the east and Richmond to the west. The County contains the original Jamestown settlement and is adjacent to Williamsburg, both centers of historic interest and popular tourist areas.

Because of the many attractions of this area, James City County is the second fastest-growing county in Virginia. It also is host to growing numbers of tourists each summer. The

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[2] 44 Fed. Reg. 58,076, 58,078 (1979) (emphasis added). "It is important to recognize that there are circumstances where the impacts of the project are *so significant* that even if alternatives are not available, the discharge may not be permitted. . . ." Memorandum of Agreement Between the Environmental Protection Agency and the Department of the Army Concerning the Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines (Feb. 6, 1990) at 3 n. 5 (emphasis added).

increasing population of residents and tourists, and the limited freshwater resources of the region present significant problems for provision of public water supply and fire protection.

In 1979, consultants advised the County that it faced severe water shortages unless a new, reliable source could be found. The County and its consultants performed numerous water supply studies and reviewed others by federal, state, and private entities. They concluded that construction of a reservoir on Ware Creek in cooperation with neighboring New Kent County was the only practicable solution. The Ware Creek Reservoir would meet the needs of James City and New Kent Counties through 2030, and its yield could be enhanced to meet the needs of a larger region by adding facilities to pump water from nearby streams into the Reservoir during times of high flows.

B. Initial Regulatory Proceedings

1. The Corps of Engineers

After several years of study and coordination with the Corps and neighboring jurisdictions, the County in 1984 applied to the Corps' Norfolk District for a permit to place fill for dam construction. As required by § 102 of the National Environmental Policy Act ("NEPA"), 42 U.S.C. § 4332, the Corps examined all potential means of meeting that need. That included larger, "regional" water supply projects that could not be implemented by the County alone.[3] EPA was designated a

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[3] NEPA requires consideration of all reasonable alternatives to a project regardless of whether they can be implemented by the permit applicant. *Forty Most Asked Questions Concerning CEQ's NEPA Regulations*, 46 Fed. Reg. 18,026, 18,027 (1981). The Corps did so in this case:

> Every regional alternative discussed, and in fact, every regional alternative ever identified, was addressed and found to be engineeringly or economically infeasible,

"cooperating agency" in preparing the Final Environmental Impact Statement ("Final EIS"), which considered every alternative suggested and analyzed their environmental effects.

On July 11, 1988, the Corps found that the County's need for an expanded and more-reliable water supply was "overpowering" and that constructing the Ware Creek Reservoir was the only "practicable" means of meeting that need. Record of Decision (July 11, 1988), App. A-3. The Corps based its findings on some sixteen water supply studies, including the Final EIS and other comprehensive assessments of potential regional water supply solutions. *See e.g.*, Corps, *Water Supply Study: Hampton Roads, Virginia* (1984), AR A-52; SWCB, *James Water Supply Plan* (March 1988), AR A-25. But of the 29 "regional" projects the Corps investigated, EPA opposed 28 and the last proved impracticable.[4] The Corps' District Engineer concluded:

> I find that the consequences of not developing a reliable water supply . . . are too dangerous and damaging to contemplate as an alternative. Given the seven years which this project has taken to get this far, I am not at all convinced that James City County could develop another source of water in time to forestall the potentially disastrous system failure which the Peninsula could realistically face by the end of [1999] if this project were not allowed. Though there has been much

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environmentally more damaging, or contrary to the specific policies of affected State regulatory agencies.

Letter from District Engineer Col. J. J. Thomas to EPA Regional Administrator James M. Seif (Aug. 29, 1988), Administrative Record ("AR") C-25.

[4] Record of Decision, App. A-(5); Corps, Analysis of the Proposed Discharge With Respect to Section 404(b)(1) of the Clean Water Act (July 11, 1988) ("404(b)(1) Analysis"), App. B- (3-4).

> study and more talk devoted to regional solutions over the past several years, the fact remains that such an alternative does not currently exist and does not appear to be even likely in the future.

Record of Decision, App. A-3.

The Corps also considered the environmental effects of the Reservoir and assisted the County in preparing a Mitigation Plan to offset them. The Corps determined:

> [T]he gross adverse environmental impacts of the project are substantial, but mitigated to the extent that they are acceptable. . . . There is no evidence, and there are no substantiated statements, to indicate that this project would cause any adverse cumulative impact on the Chesapeake Bay. I find that the project would have a very beneficial impact on municipal water supplies, a very beneficial impact on both lake and anadromous fish habitat, a positive impact on recreational opportunities, and no significant or long term impact on shellfish beds. The project would have a mixed impact on wildlife associated with aquatic ecosystems (three out of seven evaluation species benefitting from the project).

404(b)(1) Analysis, App. B-11. The Corps specifically found the Mitigation Plan was most likely to replace 230 acres of the 381 acres of vegetated wetlands potentially affected by the project. Record of Decision, App. A-10.

The Corps evaluated the effects remaining after mitigation in light of the lack of any practicable alternative -- local or "regional." It concluded the Reservoir's effects were adequately mitigated and acceptable. 404(b)(1) Analysis, App. B-11. The Corps therefore proposed to permit the placement of fill for Reservoir construction.

2. Virginia's State Water Control Board

The SWCB also considered the effects of the proposed Reservoir as required by § 401(a) of the Clean Water Act. App. K-1. Like the Corps, the SWCB evaluated the Reservoir's effects in light of the County's need for water and the absence of any practicable alternative. On December 22, 1988, it certified that the Ware Creek Reservoir complied with all applicable environmental laws, standards and policies. App. C-1.

3. EPA

EPA chose also to assess the effects of placing fill for the Reservoir under § 404(c) of the Clean Water Act. App. K-3. On July 10, 1989, EPA issued its Final Determination prohibiting the placement of fill for construction of the Ware Creek Reservoir. EPA said that the "acceptability" of the project's effects should be judged in light of whether less-damaging alternatives are available. But unlike the Corps and the SWCB, EPA claimed alternatives were practicable, citing several smaller projects. Final Determination, App. D-73-88. EPA agreed with the Corps that no larger, "regional" project was available:

> Clearly, the Corps applied regional considerations in its evaluation of the availability of practicable alternatives to the Ware Creek proposal as a local water supply project and factored in its concern that a reservoir on Ware Creek is a necessary component of a regional water supply. However, as noted by the Corps and James City County, within the current institutional framework, the County does not have the authority to effect a regional water supply plan. Nor have institutional arrangements with the state and neighboring local jurisdictions been made to even propose such a plan.

App. D-92. Relying on the claim that several smaller alternatives were practicable, EPA said the adverse effects of the Ware Creek Reservoir were "unnecessary" and therefore "unacceptable." App. D-7.

In further contrast to the Corps and the SWCB, EPA did not consider that the Mitigation Plan might reduce the effects of the project to an "acceptable" level. Instead, EPA asked whether the Mitigation Plan would achieve "no net loss" of wetlands (rather than no "unacceptable adverse effect").[5] EPA found the Mitigation Plan "inadequate" because it would not *entirely offset* all impacts to wetlands:

> The proposed acreage is insufficient *to replace* the extent of wetlands that would be lost. [App. D-64.]
>
> • • •
>
> [W]hile the County's proposed wetland creation efforts are generally feasible, there is no information suggesting that the wetland creation effort would produce *the existing cover-types* or produce them in *their current proportions* or, therefore, that the created wetlands would exhibit *the current range* of habitat values. [App. D-65-66, emphasis added.]

EPA also did not consider whether the Mitigation Plan might reduce effects below the "unacceptable" threshold because it claimed "practicable alternatives" were available:

> [I]t would be inappropriate to approve the proposed project based upon the offered mitigation given EPA's finding that there are practicable, less environmentally damaging alternatives. . . . [App. D-61.]
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> • • •

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[5] App. D-59-60. As EPA's counsel later admitted, "The agency's policy [concerning mitigation], if anything, is no net loss." Transcript (July 28, 1992), Court Record ("CR") 72 at 46.

> [A]ctions to minimize the environmental effects of permit proposals should follow the sequence: avoid, minimize and restore, in decreasing order of preference. . . . EPA believes there are practicable, less environmentally damaging alternatives to satisfy the projected water supply needs of James City County. Therefore . . . EPA believes the mitigation plan to be inappropriate because . . . the adverse impacts . . . are unnecessary. [App. D-73.]

EPA's Final Determination thus treated the Mitigation Plan as a commendable -- but ultimately irrelevant -- gesture. App. D-72.

C. *JCC I*

The County challenged EPA's action in the District Court for the Eastern District of Virginia. There, EPA argued:

> EPA has reasonably determined that the "acceptability" of adverse effects on the environment can best be evaluated in light of all relevant factors, including concerns such as the availability of alternatives. . . . Since Congress, in enacting section 404(c), tried to strike a balance between environmental protection and economic growth, see, e.g., 1 A Legislative History of the Water Pollution Control Act Amendments of 1972 (1973) . . . at 816-17, this interpretation of the statute furthers the legislative intent. Moreover, since this interpretation of the statute has been EPA policy since 1979, . . . it is entitled to even greater deference than might be accorded to other kinds of agency interpretations.[6]

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[6] Reply Memorandum in Support of Defendants' Motion for Summary Judgment (Sept. 14, 1990), CR 37 at 2-3.

When asked what role the community's need for water should play in that assessment, EPA's counsel said it would be a very important factor if no practicable alternative was found:

> EPA considers that to be a critical consideration. [Municipal water supply] is one of the considerations specified in 404(c) so it is certainly a factor. And EPA would -- if EPA found there were no alternatives available at all, in other words, that to veto the project here meant James City County would not have enough water, that would be a very difficult decision for EPA to make.
>
> * * *
>
> But we don't have that case here before us. . . . EPA is certainly authorized to say the environmental consequences are so [adverse] that we are going to veto this project even though you won't have enough water. EPA is authorized to say [that]. But they are also required to consider the water supply.

Transcript (Sept. 21, 1990), CR 38 at 49-50.

On November 6, 1990, the District Court held that EPA failed to bear its burden of establishing that practicable alternatives existed to the Ware Creek Reservoir. EPA's contrary claim was not only unsupported, it was disproved by the administrative record. 758 F. Supp. at 353, App. E-7-9. The District Court set aside EPA's prohibition and directed the Corps to issue the permit it had previously decided to issue.

The District Court denied EPA's request for a stay pending appeal on February 7, 1991, owing to "James City County's demonstrated need for a reliable water supply and the overwhelming public interest inherent therein." EPA did not seek a stay from the Court of Appeals. The Corps issued the permit to James City County on March 1, 1991, and the County proceeded with preparations for construction.

On appeal to the Fourth Circuit, EPA continued to say that whether effects are "unacceptable" under § 404(c) must be

assessed in light of all relevant information -- including whether practicable alternatives are or are not available:

> The statutory term "unacceptable" must certainly authorize the Agency to consider and balance a wide variety of pertinent factors, including the scope and severity of a project's environmental effects in light of the benefits to be obtained from it.

Reply Brief for Appellants EPA and Corps of Engineers (May 16, 1991) at 8-9. EPA insisted there were practicable alternatives, but asked for a remand even if the court concluded otherwise:

> [A] remand is both legally required and essential to allow the EPA to decide whether the County's section 404 permit should be vetoed even if the County lacks alternatives to the Ware Creek Reservoir.[7]
>
> * * *
>
> [A]ll EPA really seeks here is the opportunity to decide for itself whether this project's adverse effects are so "unacceptable" as to warrant the Agency's veto even if the County lacks practicable alternatives.[8]

Faced at oral argument with the panel's obvious concern for the water needs of James City County, EPA's counsel volunteered that, if the agency was granted a remand, it would complete it within sixty days.

On January 29, 1992, the Fourth Circuit agreed with the Corps, the SWCB and the District Court that the exhaustive studies in the administrative record established that no

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[7] Brief For Appellants EPA And Corps Of Engineers (April 18, 1991) at 45.

[8] Reply Brief For Appellants EPA And Corps Of Engineers (May 16, 1991) at 10.

practicable alternative existed. It said the record evidence made that conclusion "unavoidable" and it refused to permit EPA to contend otherwise on remand. 955 F.2d at 259-60, App. F-12-13. Stressing EPA's voluntary commitment to act within sixty days, the Fourth Circuit granted EPA's requested remand. As the District Court later summed up, "the Court of Appeals gave the EPA sixty days in which to determine whether, in the absence of alternatives, the Ware Creek project was 'unacceptable' within the meaning of the Clean Water Act." App. H--2.

D. Regulatory Proceedings On Remand

But on remand EPA did not acknowledge the lack of a practicable alternative to the Ware Creek Reservoir in any way. Instead, it merely refrained from discussing what EPA continued to call "the availability of less environmentally damaging practicable alternatives to the Ware Creek water supply impoundment. . . ." Final Determination on Remand (March 27, 1992), SAR 17 at 47, App. G-72.

Though EPA's first prohibition said the supposed *availability* of alternatives made the Reservoir's effects *unnecessary* and therefore "*unacceptable*," its second failed to consider that the established *absence* of alternatives might make those effects *necessary* and therefore "*acceptable*" under § 404(c). EPA's Final Determination on Remand of March 27, 1992 did not consider James City County's need for the reservoir, the absence of any alternative, nor the potential consequences of failing to build it. Nor did EPA explain its failure to consider any of these factors.

Nor did EPA's decision on remand evaluate whether the effects of the project might be rendered "acceptable" by the Mitigation Plan. Notwithstanding the established lack of alternatives, EPA again dismissed the Plan because it would not

achieve "no net loss."[9]

E. *JCC II*

Back before the District Court, EPA's counsel was pressed to explain EPA's failure to consider these factors. He provided a response exactly opposite EPA's prior position:

> THE COURT: Do I understand that you take the position that the lack of any water supply and the effect upon James City County is something that you can completely rule out, you don't have to look at that at all? I take that from your brief -- that's the reading I took of it.
>
> MR. CARSON: Your Honor, that's correct.

Transcript (July 28, 1992), CR 72 at 31. Meanwhile, environmental groups supporting EPA as *amici curiae* attached to their memorandum portions of a preliminary draft of yet another "regional" water supply study prepared by consultants to the City of Newport News. Based on this non-record material, *amici curiae* argued that the County's water needs could be met by an alternative project.

The District Court set aside EPA's second prohibition on August 4, 1992. It did so for two independent reasons. First, the District Court held that EPA was required to consider but "completely ignore[d] James City County's desperate need for

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[9] EPA restated the derivation of its "no net loss" policy and said it was using § 404(c) to implement that policy. App. G-57-59. It then again found the Plan "inadequate" because, "[t]he proposed acreage is insufficient to *replace* the extent of wetlands that would be lost" (App. G-63, emphasis added) and "there is no information suggesting that the wetland creation effort would produce the *existing* cover-types or produce them in their *current* proportions or . . . *current* range of habitat values." App. G-64 (emphasis added).

water." 23 Envtl. L. Rep. at 20,229, App. H-3. The District Court was unmoved by continuing argument from *amici curiae*, based on non-record "evidence," that EPA's failure to consider this matter should be excused because yet another "regional" source was entering the regulatory gauntlet. Second, the District Court found that "the environmental data in the administrative record also fail to provide substantial support for the EPA's position." This was "primarily because of [EPA's] failure to consider the mitigation plan adequately." 23 Envtl. L. Rep. at 20,229, App. H-4. But EPA also overlooked uncontradicted evidence that the Ware Creek watershed will be timbered and developed even if the Reservoir is not constructed (thus displacing wildlife without mitigation). 23 Envtl. L. Rep. at 20,229-30, App. H-6.

EPA did not seek a stay of the District Court's decision and the Corps accordingly reinstated James City County's § 404 permit. Preparations for Reservoir construction resumed.

On appeal, EPA's counsel sought to explain EPA's policy regarding alternatives. He said if a practicable alternative exists, EPA will consider that fact in deciding if the project's effects are "unacceptable." But if no such alternative exists, EPA will ignore that fact and focus only on matters of water quality. Reply Brief for Appellants EPA and Corps of Engineers (Feb. 16, 1993) at 10. The Fourth Circuit summarized this argument as follows:

> The EPA . . . asserts that while it may in its sole discretion consider the need for water, the only requirement placed on it by Congress is to consider the project's potential adverse impacts on the environment.

12 F.3d at 1335, App. I-10.

In its decision of December 30, 1993, the Fourth Circuit noted that § 404(c) of the Clean Water Act is ambiguous as to what EPA must consider:

> [EPA's] authority to veto to protect the environment is

practically unadorned. It is simply directed to veto when it finds that the discharge "will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas . . ., wildlife, or recreational areas."

It said that the only factor clearly and unambiguously identified for consideration in § 404(c) is water purity. On that basis, the Fourth Circuit excused EPA from considering any factor other than water purity and reversed the District Court. 12 F.3d at 1336, App. I-12.

The Fourth Circuit also reversed the District Court's finding that EPA's allegations regarding the effects of the Reservoir were not adequately supported by the administrative record. It did not address EPA's failure to consider the matters cited by the District Court. Instead, the Court of Appeals cited EPA's findings and conclusions and said, "the district court erred in failing to recognize the deference due the EPA's determination." 12 F.3d at 1338, App. I-17-18.

The Petition of James City County for Rehearing and Suggestion for Rehearing in Banc was denied by the Fourth Circuit on March 25, 1994. App. J-1.

REASONS FOR GRANTING THE WRIT

I. THIS COURT SHOULD DECIDE WHETHER § 404(c) PERMITS EPA TO IGNORE AN APPLICANT'S NEEDS AND THE LACK OF ANY PRACTICABLE ALTERNATIVE MEANS OF MEETING THEM, AND TO FOCUS ENTIRELY ON WATER PURITY.

A. This Is an *Important* Federal Question.

In the fifteen years since EPA published implementing regulations, it has pursued the § 404(c) process to completion

twelve times. It has blocked a municipal landfill, a flood control project, three municipal water supply reservoirs, two recreational impoundments, three agricultural operations, a shopping mall, and two warehouse complexes. Each of the last five EPA actions has involved a public water resource project.

As important as the direct consequences of these completed § 404(c) actions are to the communities involved, they are just "the tip of the iceberg." For each project EPA has blocked with a completed § 404(c) action, it has blocked many more with threatened or proposed § 404(c) actions. As with its completed prohibitions, targets of EPA's threatened actions often are large public infrastructure projects undertaken by state and local governments -- including water resource projects, transportation improvements such as roads, ports and airports, municipal waste management facilities, and educational and recreational centers.

Furthermore, EPA claims that "one of the basic functions of 404(c) is to police the application of the 404(b)(1) guidelines" by the Corps in its permit decisions. 44 Fed. Reg. 58,076, 58,078 (1979). EPA thus admittedly uses § 404(c) in selected cases to compel the Corps to apply EPA's policies to § 404 permitting generally. An excellent example is provided by EPA's decision to block construction of the shopping mall in the *Bersani* case, thereby compelling the Corps to accept the EPA policy called "sequencing."[10] If EPA, as its counsel claims,

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[10] Up to EPA's final § 404(c) action regarding the Attleboro Mall, the Corps allowed a permit applicant to make its preferred project the least damaging alternative by performing beneficial "mitigation." *Bersani v. Environmental Protection Agency*, 674 F.Supp. 405, 410 (N.D.N.Y. 1987). EPA contended the least damaging alternative must be identified prior to consideration of any mitigation, and called this "sequencing." EPA blocked construction of the mall saying an alternative was available to the applicant that -- prior to consideration of mitigation -- was less damaging. After EPA's prohibition was upheld by the Second Circuit, the Corps renounced

has indeed decided that the alternatives provisions of the 404(b)(1) guidelines must be applied so that the lack of any alternative is irrelevant, then that policy is potentially applicable to every § 404 permit decision.

In many communities across the country, public infrastructure facilities of the kind at issue in this case simply cannot be built without placing fill in areas subject to § 404. And the 404(b)(1) guidelines allow issuance of a permit only for the single, least-damaging alternative. That means, in such communities, the Corps and EPA (not state, regional or local planning departments) determine what water supply is tapped -- if any, what transportation project is built -- if any, what waste management facility is constructed -- if any, and what educational and recreational centers are permitted -- if any.

James City County is one example of communities nationwide with pressing infrastructure requirements. The evidence in the administrative record is uncontradicted concerning the County's need for water. Water levels in its wells are falling, and water quality is deteriorating as brackish water enters an overdrawn aquifer. The County has abandoned several wells already and predictions are that it must soon abandon more in order to maintain Safe Drinking Water Act standards. On top of this, the County's population of residents and tourists continues to grow. The District Court quite properly described the County's water situation as "desperate."

The immediate, practical consequence of the decision below for the citizens of James City County is to ban construction of the water supply finally adjudged to be their only "practicable" source. According to the Corps, the result could be "too dangerous and damaging to contemplate" -- a "potentially disastrous system failure" by the year 2000. Record of Decision,

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its policy. It now issues permits only for projects that are the least damaging prior to consideration of proposed mitigation work. Memorandum of Agreement between the Environmental Protection Agency and the Department of the Army *et cet.* (Nov. 15, 1989).

App. A-3. The Corps' finding that the health and safety (including fire protection) of this community is directly threatened by EPA's action is fully supported by the administrative record.

Even though they contend the consequences of EPA's action are irrelevant under § 404(c) and admit that EPA never considered them, EPA's counsel and *amici curiae* found it necessary to argue -- on the basis of *non-record* "evidence" -- that no ill effects will occur. The Fourth Circuit felt compelled to do the same. Referring to the submissions of *amici curiae* as "[r]ecord material," it speculated that the City of Newport News may succeed in licensing and constructing a Black Creek or King William Reservoir, that the needs of James City County may thereby be met, and that such a project may produce more water with less adverse effects.[11]

The Fourth Circuit's use of this material -- and disregard of the overwhelming contrary evidence in the record -- was legally and factually in error. The material was *not* part of the administrative record, and EPA expressly disclaimed any reliance on it.[12] Judicial review is limited to "the administrative

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[11] 12 F.3d at 1334, n. 1, App. I-8-9, n. 1. That EPA, *amici curiae*, and the Fourth Circuit each felt it necessary to highlight supposedly irrelevant, non-record material demonstrates that the consequences of EPA's action are actually highly relevant to whether effects are acceptable or unacceptable.

[12] EPA's counsel described the history of these documents as follows:

> [T]hese documents are neither part of the administrative record in this Section 404(c) proceeding, nor were they relied upon in any way as a basis for the Remand Determination. They come before this Court as a part of the judicial record below, where amici Southern Environmental Law Center ("SELC"), et al., endeavored to make the district court aware of the realities outside the cocoon woven in litigation.

record already in existence, not some new record made initially in the reviewing court." *Camp v. Pitts*, 411 U.S. 138, 142 (1973). Furthermore, "[i]t is well established that an agency's action must be upheld, if at all, on the basis articulated by the agency itself." *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 50 (1983). This material should have played no role in the decision below.

The Fourth Circuit also overlooked what the administrative record *does* contain regarding its speculations. For example, it reveals that EPA and other agencies have already nixed a Black Creek project on multiple occasions.[13] Regarding Newport News' King William Reservoir, the record contains the following EPA comments: "The purchase of water from Newport News is legitimately not attractive on a long-term basis, since it is simply not cost-effective." Final EIS, AR A-31 at 5-11. It shows that, even with the optimistic assumption that all of its existing wells will remain sound, the County will need water within just a few years. It thus cannot await the uncertain conclusion of lengthy licensing and the inevitable litigation which must be completed before construction of another project might possibly begin. It also shows that the Ware Creek site will not remain available as a fallback -- it soon will be timbered, developed, and lost as a potential water supply.

The Fourth Circuit originally ruled that EPA bears the burden of demonstrating that an alternative is practicable. It ruled that EPA not only failed to do so, but that the record proved the opposite. It attempted to close the issue once and for all. Now -- more than a decade after James City County "entered the market" for a water source -- it has cited

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Reply Brief for Appellants EPA and Corps of Engineers (Feb. 16, 1993) at 6.

[13] A reservoir on Black Creek augmented with water pumped from the Pamunkey River was one of the 28 "regional" projects investigated by the Corps but rejected by EPA and other agencies. Record of Decision, App. A-8, A-12.

preliminary, non-record materials concerning a new crop of supposed alternatives. On that basis, it revises history and suggests that this case is about how -- not whether -- the County's water needs will be met. If that is permitted to stand, then no finding of a lack of alternatives will ever be final.

This case will decide whether the courts will allow EPA to exercise the tremendous power of § 404(c) irresponsibly and without any meaningful judicial review. The decision below held EPA may *completely disregard* the needs of communities, their lack of any other practicable means of meeting them, and the likely consequences of its action. That is a question of obvious national importance. The unreasonableness of the Fourth Circuit's holding is not altered by speculation that this County may -- or may not -- eventually find another source of water.

B. The Decision Below Conflicts with Prior Decisions of this Court.

1. The Decision Below Failed to Require EPA to Adhere to Its Long-Standing Policy.

EPA's long-standing policy plainly says EPA "can take into account the fact that the alternative sites or methods are or are not available, so that the loss of resources is avoidable or unavoidable." 44 Fed. Reg. 58,076, 58,078 (1979). EPA's counsel confirmed this policy in *JCC I*, saying EPA would have to consider the County's water supply needs if it found no practicable alternative to the Ware Creek Reservoir. *See* page 12, above.

EPA adhered to this policy so long as it was able to summon a practicable alternative to the project it was reviewing. But when faced by *JCC I* with the lack of alternatives in this case, EPA made an abrupt and unexplained about-face. It did not consider the County's need for water and the absence of alternatives on remand, and did not explain its failure to do so.

This Court has repeatedly held that an administrative

agency is bound by its long-standing interpretations of law and its own regulations unless and until it clearly acknowledges a change in policy and provides a reasoned explanation for it. *Atchison, Topeka & Santa Fe Ry. Co. v. Wichita Bd. of Trade*, 412 U.S. 800, 807-08 (1973); *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 41-43 (1983).

The decision below did not require EPA to follow, or to explain its failure to follow, its long-standing, plainly-stated policy. It is in conflict with this Court's settled rule of administrative law and should be reviewed for that reason.

2. The Decision Below Failed to Require EPA to Articulate an Adequate Rationale for Its Action.

The only explanation for EPA's failure to consider the lack of any practicable alternative to the Ware Creek Reservoir came *post hoc* from EPA's *counsel* during this litigation. At that time EPA's counsel claimed that when no alternative exists, EPA may ignore that fact. The decision below apparently accepted that this was the actual basis for EPA's failure to consider the lack of alternatives to the Ware Creek Reservoir.

An administrative agency must itself "articulate a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.'" *Motor Vehicle Mfrs. Ass'n*, 463 U.S. at 43 quoting *Burlington Truck Lines, Inc. v. United States*, 371 U.S. 156, 168 (1962).[14] That connection cannot be supplied after-the-fact by agency counsel during litigation. *Burlington Truck Lines*, 371 U.S. at 169 ("For the courts to substitute their or counsel's discretion for that of the Commission is incompatible with the orderly functioning of the

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[14] *See also Secretary of Agric. v. United States*, 347 U.S. 645, 653-54 (1954) (Interstate Commerce Commission failed adequately to explain its departure from prior regulatory practice when it could not be determined whether the agency simply disregarded facts found or whether it modified its normal regulatory doctrine).

process of judicial review"). If the grounds stated by the agency are inadequate, "the court is powerless to affirm the administrative action by substituting what it considers to be a more adequate or proper basis." *Securities and Exch. Comm'n v. Chenery Corp.*, 332 U.S. 194, 196 (1947).

Here, EPA articulated no connection at all between an important fact found (the lack of any practicable alternative to the Ware Creek Reservoir) and the decision made (to block Reservoir construction). One cannot know whether EPA negligently or willfully disregarded the absence of alternatives or, as EPA's counsel belatedly claimed, made a conscious policy decision to ignore the lack of any practicable alternative. By permitting *EPA's counsel* to supply an explanation *post hoc*, the decision below conflicts with the foregoing decisions of this Court.

3. The Decision Below Failed to Defer to EPA's Long-Standing Policy.

The Fourth Circuit did not merely allow EPA's counsel to provide a new, previously missing policy to explain EPA's conduct. It actually accepted and enforced that policy. In so doing, it displaced the contrary statutory interpretation announced long ago by EPA itself. In place of the rule stated in the preamble to EPA's § 404(c) regulations ("the Administrator can take into account the fact that the alternative sites or methods . . . are not available"), the Fourth Circuit substituted one articulated only by EPA's counsel in litigation ("while [EPA] may in its sole discretion consider the need for water, the only requirement placed on it by Congress is to consider the project's potential adverse impacts on the environment"). 12 F.3d at 1335, App. I-10.

This too violates the prior decisions of this Court. In *Chevron U.S.A. Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837 (1984), this Court held that an agency's properly-adopted and reasonable interpretation of an ambiguous statutory provision will not be displaced by a federal court.

This rule has been applied extensively when regulated entities seek to vitiate a regulatory policy. No exception permits an agency which has failed to follow its policy to disavow it through counsel in subsequent litigation.

The decision below displaced EPA's long-standing statutory interpretation that whether alternatives are or are not available is relevant to determining if the effects of a project are acceptable or "unacceptable." It did not inquire whether that is a reasonable interpretation. It did not consider that other courts have found that it is.[15] For these reasons as well, the decision below is contrary to the prior decisions of this Court and should be reviewed.

4. The Decision Below Improperly Granted EPA Discretion to Ignore Relevant Factors.

Finally, the policy offered by EPA's counsel and accepted by the Fourth Circuit -- that EPA may consider whether alternatives exist when an alternative is found, but may ignore the matter when no alternative is found -- also violates prior decisions of this Court.[16] When a factor is relevant to an agency's decision, it is arbitrary and capricious for the agency to fail to consider it. *Motor Vehicle Mfrs. Ass'n*, 463 U.S. at 43. Agencies have no discretion to consider some relevant factors and to ignore others, or to consider relevant factors some of the

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[15] *Bersani v. Environmental Protection Agency*, 674 F.Supp. 405 (N.D.N.Y. 1987), *aff'd sub nom Bersani v. Robichaud*, 850 F.2d 36 (2d Cir. 1988) *cert. denied* 489 U.S. 1089 (1989); *Newport Galleria Group v. Deland*, 618 F.Supp. 1179 (D.D.C. 1985).

[16] Trial courts in negligence actions often follow the rule that whether a traffic light is red or green when a motorist enters an intersection is a factor relevant to determining negligence. The Fourth Circuit's decision is like permitting the trier of fact to consider the color of the light if it was red, but not to consider the color of the light if it was green.

time, or when they support an agency's preordained result.[17] To hold otherwise -- as did the Fourth Circuit -- would make a new principle of administrative law out of an old joke: "Heads, the agency wins; tails, the permit applicant loses."[18]

The decision below violates fundamental principles of administrative law long enforced by this Court and should be reviewed.

C. The Decision Below Conflicts with a Decision of the Court of Appeals for the Second Circuit.

The Fourth Circuit concluded that EPA may consider only water purity under § 404(c):

> Ultimately, however, recognizing the EPA's expertise and concentrated concern with environmental matters, Congress gave the final decision whether to permit a project to that agency. Its authority to veto to protect the environment is practically unadorned. It is simply directed to veto when it finds that the discharge "will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas . . ., wildlife, or recreational areas." . . . This broad grant of power to the EPA focuses only on the agency's assigned function of assuring pure water and is consistent with the missions assigned to it throughout the Clean Water Act.

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[17] That is particularly true in this case because EPA's own § 404(c) regulations provide, "In making this determination, the Administrator will take into account all information available to him. . . ." 40 C.F.R. § 231.1(a), 44 Fed. Reg. 58,076, 58,083 (1979).

[18] James City County has never contended that the absence of an alternative necessarily entitles it to a permit. Rather, the County contends the absence of alternatives is a factor supportive of permit issuance which EPA was required to consider.

12 F.3d at 1336, App. I-12. Its decision in this regard conflicts with the decision of the Second Circuit in *Bersani v. Robichaud*, 850 F.2d 36 (2d Cir. 1988), *cert. denied* 489 U.S. 1089 (1989).

In *Bersani*, the Second Circuit was asked to review EPA's prohibition of fill for construction of a shopping mall. EPA's Final Determination said:

> As a matter of common sense, as well as regulatory practice, the "acceptability" of an adverse effect may depend on *the extent to which* that effect is avoidable. The alternatives provisions, as well as other portions of the section 404(b)(1) Guidelines, thus are necessarily relevant to a section 404(c) determination.[19]

The District Court for the Northern District of New York had ruled as follows:

> The court finds the EPA's interpretation that the avoidability of a loss may be considered in conjunction with its magnitude in determining whether it is "unacceptable" within the meaning of Section 404(c) and "significant" within the meaning of the implementing regulation is reasonable. This interpretation does not violate the plain language of the statute or the language of the pertinent regulations.

Bersani v. Environmental Protection Agency, 674 F.Supp. 405, 415 (N.D.N.Y. 1987). On appeal to the Second Circuit the applicant conceded that EPA may consider whether alternatives do or do not exist. But it claimed that determination must be made as of the time it made its permit application (when it had

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[19] Final Determination of the Administrator for External Affairs Concerning the Sweedens Swamp Site in Attleboro, Massachusetts Pursuant To Section 404(c) of the Clean Water Act (May 13, 1986), CR 62 Exhibit 4 at 14 (emphasis added).

no alternative) -- not as of the time it "entered the market" for its project as EPA contended (when it did have an alternative).

The Second Circuit said the existence of alternatives must be determined as of the date an applicant "enters the market." It therefore found that EPA's § 404(c) action was properly based on the availability of a less-damaging, practicable alternative. To reach this result, the Second Circuit necessarily accepted EPA's contention that factors other than water purity and the magnitude of environmental effects are relevant to assessing whether effects are acceptable or "unacceptable" under § 404(c). The Second Circuit relied in part on the reasoning of *Newport Galleria Group v. Deland*, 618 F.Supp. 1179, 1182 n. 2 (D.D.C. 1985) ("[I]t would be extraordinary if Congress granted the EPA a veto power over the Corps' permit decisions, but precluded it from reconsidering those issues the Corps considered in deciding to grant the permit in the first place").

II. THIS COURT SHOULD DECIDE WHETHER COURTS MUST DEFER TO AGENCY FINDINGS DESPITE OBVIOUS REASONS TO DOUBT THEIR ANALYSES.

Ordinarily, agency process is given a "presumption of regularity" and the findings of an agency are entitled to substantial deference. But there are circumstances in this case that this Court and various Courts of Appeals have determined require greater scrutiny of the agency process. The decision below ignored these "danger signals" and broadly deferred to EPA's findings.

First, this case involves joint administration of a single regulatory program by three agencies, each with statutory authority to block permit issuance based on environmental issues. One agency, EPA, has disagreed extensively with the other two, the Corps and the SWCB. Both of these found the Reservoir complied with all applicable environmental requirements. To the extent a court might defer to EPA's

findings, it would necessarily disregard those of the Corps and the SWCB.

In such circumstances, this Court has found that federal courts need not defer to one agency's findings. *General Electric Co. v. Gilbert*, 429 U.S. 125, 144-45 (1976) (where the denial of benefits for pregnancy disability would be treated as an unlawful employment practice by the Equal Employment Opportunity Commission but not by the Wage and Hour Administrator, court need not defer to EEOC). *See also Barnard v. Carey*, 60 F.Supp. 539 (N.D. Ohio 1945) (faced with conflicting findings by two agencies as to whether "Soya Butter" was "oleomargarine," court decided the question). According to Professor Bernard Schwartz, when faced with this situation "the reviewing court should decide the question for itself" based on the weight of evidence in the record as a whole. B. Schwartz, Administrative Law § 10.35 at 664 (2d ed. 1984).

In the same regulatory context presented by this case, the Second Circuit was "not thoroughly persuaded" it should defer to an EPA interpretation of the Section 404(b)(1) guidelines which conflicted with the Corps' interpretation. It accordingly did not do so. *Bersani*, 850 F.2d at 45. The decision below is thus in conflict with the decision of the Second Circuit on this issue as well.

Second, the presumption of regularity ordinarily given to EPA's actions has already been conclusively rebutted in this case. The District Court and the Fourth Circuit have both invalidated EPA's claims in this case that a reservoir is not a "water dependent activity" and that several small water supply projects are "practicable" and "available" to James City County. The Fourth Circuit found that EPA ignored "uncontroverted evidence to the contrary" to reach that result, that "there was not substantial evidence to support the EPA's conclusion," and that "the record makes this conclusion unavoidable." 955 F.2d at 260, App. F-12-13. The District Court more directly called EPA's findings "nonsense" and "pure nonsense." 758 F.Supp. at 352, 353, App. E-8-9.

Despite this -- and despite EPA's failure even to

acknowledge the lack of alternatives it declared -- the Fourth Circuit granted complete deference to EPA's findings on remand. The Fourth Circuit similarly failed to note EPA's departure from its consistent and long-standing rule and the fact that it reached the same result on remand after less than 60 days' deliberation.

The D. C. Circuit Court of Appeals has determined that such facts demand -- not *deference* -- but "more exacting scrutiny" of the agency's findings:

> More exacting scrutiny will be particularly useful when for some reason the presumption of agency regularity . . . is rebutted, as where . . . the agency has arrived at an identical result after remand from a reviewing court for further explanation of reasons, *e.g., Food Marketing Inst. v. ICC*, 587 F.2d 1285, 1289-90 (D.C. Cir. 1978); *accord; Citizens to Preserve Overton Park, supra*, 401 U.S. at 420; or when an agency has departed from its consistent and longstanding precedents or policies, *see Office of Communication of United Church of Christ v. CAB*, No. 76-1878 (D.C. Cir. Sept. 11, 1978), slip op. at 13; *International Union v. NLRB*, 459 F.2d 1329, 1341-42 (D.C. Cir. 1972).

Natural Resources Defense Council, Inc. v. Securities & Exch. Comm'n, 606 F.2d 1031, 1049-50 n.23 (D.C. Cir. 1979). The decision below is thus in conflict with a decision of the D. C. Circuit on this point.

CONCLUSION

For the foregoing reasons, the petition of James City County for a writ of certiorari should be granted.

Respectfully submitted,

WILLIAM B. ELLIS
Counsel of Record
McSweeney, Burtch & Crump
Post Office Box 1463
11 South Twelfth Street
Richmond, Virginia 23212
(804) 783-6805

FRANK M. MORTON, III
James City County
Post Office Box 8784
101-C Mounts Bay Road
Williamsburg, Va. 23187
(804) 253-6612

Counsel for Petitioner James City County, Virginia

June 22, 1994

APPENDIX A

UNITED STATES ARMY CORPS OF ENGINEERS
JULY 11, 1988

84-0614-06 RECORD OF DECISION

I have reviewed the Final Environmental Impact Statement (FEIS) for James City County's proposed water supply reservoir, and the comments received in response to the October 9, 1987 Public Notice. As part of this review I have also prepared an analysis pursuant to Section 404(b) (1) of the Clean Water Act, which is appended to this Record of Decision.

Based on my 404(b) (1) analysis, I find that this project does comply with the December 24, 1980 Guidelines, with the mitigation which is proposed. This is not an easy determination, since a substantial acreage of special aquatic sites (wetlands) will be flooded. However, I find that an impressive effort has been made to avoid, minimize, and compensate for these wetland losses, to the extent that the net loss has been reduced so as not to cause a significant degradation to the waters of the United States. I also find, after considering my Final EIS (and the comments it generated) as well as the 1984 Water Supply Study, Hampton Roads, Virginia conducted by Norfolk District and the 1987 James Water Supply Plan conducted by the Virginia State Water Control Board, that there are no practicable alternatives which would be less damaging. The Ware Creek wetlands perform many of the functions listed in 33 CFR 320.4 (b) (2) and I consider them to be a valuable public resource. With the reservoir in place, the remaining wetlands within the Ware Creek watershed will continue to perform these functions, although some will be performed to a somewhat lesser extent. The wetland creation within the reservoir will help assure that the reservoir will also be a very productive aquatic environment, and the wetlands created downstream of the dam will help offset the loss of detrital input into

the York River. The breaching of Cranstons Pond dam will reconnect hundreds of acres of wetlands which have been isolated from the Yarmouth/Chickahominy/James River system for most of a century, and, while this will not directly offset the loss to the York River, both the York and the James flow into the Chesapeake Bay. For this reason, and since no commentor has given any evidence to the contrary, I find that the cumulative impact of this project to the Chesapeake Bay will not be significant. Based on my FEIS, I find that there will be a net benefit to navigation; the slight loss of navigation in Richardson Millpond and Ware Creek being more than made up for by the creation of the new reservoir. Navigation can be an important factor in the public interest review, but in this case it is limited to recreational boating in a region with many similar opportunities, and is not particularly important. Energy conservation and development can also be a very important public interest factor, but I find that the energy needed to construct and operate this project is not of significant quantity or concern. (The energy which would be needed for some of the alternatives, particularly desalinization, would be much greater and would be of more concern.) With regard to fish and wildlife, the U.S. Fish and Wildlife Service (FWS), the National Marine Fisheries Service (NMFS), and the Virginia Department of Game and Inland Fisheries are all opposed to this project. All three contend that the project is not mitigated on a 1:1 basis for fish and wildlife losses. I concur in general with their contention, although I note that none of these agencies has suggested any specific mitigation which would be needed in order to achieve a 1:1 replacement, and that for certain species of fish and wildlife the project would substantially improve habitat. After seven years of discussion this project with agencies, organizations, and individuals through the NEPA process, I find that the mitigation which is currently proposed is all that can be reasonably expected and is adequate to avoid an unacceptable wetland functional loss. I note that James City County is currently negotiating with FWS, the Virginia Department of Game and Inland Fisheries, and the Environmental Pro-

tection Agency (EPA) to see if additional wetland mitigation outside of the Ware Creek watershed and outside James City County would induce them to drop their objections and convince EPA to cease its consideration of a permit veto. These negotiations are occurring outside the public interest review process, although if some kind of settlement is achieved, any such additional mitigation could be made a permit condition, if requested by the County. As discussed herein, though, I find the mitigation presently proposed to be adequate to prevent the project from not being in the public interest.

As stated in 33 CFR 320.4 (m), "Water is an essential resource, basic to human survival, economic growth, and the natural environment." I find that the consequences of not developing a reliable water supply, as outlined in paragraph 2.102 of the FEIS, are too dangerous and damaging to contemplate as an alternative. Given the seven years which this project has taken to get this far, I am not at all convinced that James City County could develop another source of water in time to forestall the potentially disastrous system failure which the Peninsula could realistically face by the end of the next decade if this project were not allowed. Though there has been much study and more talk devoted to regional solutions over the past several years, the fact remains that such an alternative does not currently exist and does not appear to be even likely in the future.

I am greatly concerned over the environmental losses which the EPA, FWS, NMFS, and others have pointed out, and I agree that not all of these losses will be completely mitigated. I also find, though, that the mitigation will reduce the net effect of the losses to the point where they will not significantly degrade the waters of the United States. Were it not for the overpowering need for the project and the lack of practicable alternatives, I could not justify this project as being in the public interest. The need cannot be overlooked by any responsible party, though, and the evidence concerning the lack of practicable alternatives is over-

whelming. For these reasons I find this project not to be contrary to the public interest and find that a permit should be issued, requiring all of the environmental mitigation discussed in the FEIS which is described as being successful and effective.

The following are comments received from agencies, organizations, and individuals during the October 9-November 9, 1987 comment period (later extended through November 24).

By letter dated November 23, 1987, Region III of the Environmental Protection Agency (EPA) commented on the FEIS. EPA's comments are addressed below:

COMMENT: The project would significantly degrade more that 425 acres of unusually diverse and productive wetlands.

RESPONSE: I concur that the existing wetlands are very productive and diverse, and I would much rather see them maintained in their present condition if some other feasible and reasonable solution to the water supply problem could be found. The 425 acre figure includes vegetated wetlands as well as shallow water habitat which may support vegetated shallows. As noted in the FEIS on pages 5-37 and 5-38, these wetlands are diverse and productive, but not unique. Other creek/wetland systems in this area are similarly diverse and productive.

COMMENT: The wetland mitigation plan will not completely compensate for habitat losses, other wetland functional value losses, or wetland acreage.

RESPONSE: I recognize that the proposal described in the FEIS does not constitute 1:1 mitigation of vegetated wetlands in terms of either habitat or acreage. At a November 19, 1987 meeting between the Corps, the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, and the Environmental Protection Agency, my staff asked for specific suggestions for

additional wetland mitigation. To date we have received none. By CEQ regulation (40 CFR 1503.3 (d) EPA and FWS are required to inform me of any such wetland mitigation which they consider necessary ("When a cooperating agency with jurisdiction by law objects to or expresses reservations about the proposal on grounds of environmental impacts, the agency expressing the objection or reservation shall specify the mitigation measures it considers necessary to allow the agency to grant or approve applicable permit, license, or related requirements or concurrences"). EPA was a cooperating agency and has jurisdiction by law under Section 404(c) of the Clean Water Act. EPA agreed in 1985, as a cooperating agency, to perform a wetland functional values assessment for inclusion in the FEIS. EPA never prepared this analysis. The County has proposed extensive wetland mitigation within the reservoir and downstream in Ware Creek. In addition they have found another site within the County but outside the Ware Creek watershed (Cranstons Pond) where they propose a very innovative and appropriate form of mitigation; turning an existing reservoir back into a wetland. There are no other wetland mitigation sites within the Ware Creek watershed and there is a reasonable limit to the geographical area which can be expected to be searched for additional wetland mitigation opportunities in the absence of specific suggestions. Therefore, I believe a reasonable requirement of mitigation has been reached, considering the total public interest and in the absence of alternative water supply solutions. Consequently, I believe that the project is adequately mitigated and environmentally acceptable.

COMMENT: The project will degrade water quality both within the reservoir and downstream.

RESPONSE: The FEIS notes that the reservoir will probably become eutrophic, or at least upper mesotrophic, as are most other reservoirs in Virginia's Coastal Plain. This has not kept these reservoirs from being used as water supplies, however, and many are extensively used for fishing and boating. I know of no evidence

that the project will "degrade" the downstream water quality of Ware Creek. Reservoirs normally act as efficient sediment and nutrient traps and this, combined with the guaranteed minimum release, may actually improve downstream water quality.

COMMENT: The potential cumulative impacts to the Chesapeake are "evident".

RESPONSE: Norfolk District asked EPA, in its capacity as a cooperating agency for the FEIS as well as the lead agency for the Chesapeake Bay Program, to identify these cumulative impacts and their effects on the Bay so that they could be included in the FEIS. By letter of December 11, 1985, EPA agreed to do so and to submit a final report to the District by September 1, 1986. The study has never been performed. The December 11, 1985 letter stated "We appreciate the opportunity you are providing EPA in this decisionmaking process." EPA was given every reasonable opportunity to constructively contribute to the NEPA process as a cooperating agency (40 CFR 1501. 6(b)). By failing to do so, EPA has substantially reduced the force and significance of its objections to this project concerning loss of wetland functional values and cumulative impacts on the Chesapeake Bay. Because of their general expertise in these two areas I would normally give great weight to their comments, but in this case I do not find them persuasive. (See "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations", Federal Register Vol. 46, No. 55, March 23, 1981; response to question 14d, page 18031.) I find no evidence of any significant adverse cumulative effect this project would have on the Chesapeake Bay.

COMMENT: This project would set a precedent of allowing significant environmental degradation for limited returns. Other water supply impoundments have been proposed for this area of Virginia.

RESPONSE: I concur that it is probably not a good policy to generate only incremental solutions to a regional water supply problem, and I would prefer to avoid doing so. However, no practicable regional solution (or solutions) has ever been suggested by any agency, organization, or individual which has been determined to be environmentally acceptable by EPA, the U.S. Fish and Wildlife Service (FWS), and the National Marine Fisheries Service (NMFS). The Norfolk District has been on record since 1984 (Water Supply Study Hampton Roads Virginia), and the Virginia Water Control Board as recently as 1987 (James Water Supply Plan), projecting a regional water supply deficit by the year 2030 of between 35 and 40 mgd. All agencies with expertise in this area are in agreement that an additional water supply is needed. The history of water supply development on the Peninsula in this century has been one of incremental development of surface (direct withdrawal and reservoir construction) and groundwater resources which are then tied into a regional network. Since many years of study by several local, State, and Federal agencies have not identified any acceptable or feasible long term regional alternative, continuation of incremental development appears to be the only practicable solution available.

COMMENT: EPA is convinced that less damaging alternatives to the proposal exist but remain unidentified.

RESPONSE: If less damaging alternatives remain unidentified, it is not for lack of effort. Our 1984 Water Supply Study identified approximately 29 alternatives to meet the water supply needs of the Peninsula. EPA supported only one; a pipeline to the James River above Richmond, which, at the minimum instream flows recommended by the FWS would have a safe yield of 14 mgd or less. (This assumes that such a pipeline would be hooked into the existing Newport News water system of reservoirs. By itself, the pipeline would have no safe yield without somewhere to store water for use during times when flow in the River is less than the minimum instream flow). In an independent effort, the

Virginia State Water Control Board developed its own list of regional alternatives for the Peninsula in its 1987 James Water Supply Plan. EPA has been involved with the Ware Creek EIS since its initial scoping letter of May 12, 1981 and EPA was a cooperating agency for the Final EIS. To maintain that a practicable alternative could be identified with yet another study is not supported by the record and begs the question why this seven-year effort, with numerous opportunities for input from EPA (as well as FWS, NMFS, and other agencies and organizations), has not succeeded in identifying such an alternative or alternatives.

By letter dated November 24, 1987, the U.S. Fish and Wildlife Service (FWS) commented on the FEIS. This letter was later submitted under a December 22, 1987 cover letter from the U.S. Department of Interior Office of Environmental Project Review. Since the Department's cover letter primarily summarized and reiterated the FWS letter, the FWS comments are addressed below:

COMMENT: The Corps should have evaluated this project from a regional perspective and not just a local one.

RESPONSE: The FEIS in its very first paragraph placed this project in a regional perspective, and several alternatives analyzed were considered as both local and regional alternatives (e.g.: groundwater, desalinization, James River pipeline, etc.).

COMMENT: Scoping failed to identify, and the FEIS failed to discuss, multiple source alternatives.

RESPONSE: Scoping may have failed to identify multiple source alternatives, but they were considered anyway. The FEIS discusses a Pamunkey/Black Creek alternative, a Pamunkey/Crump Creek/Ware Creek alternative, and a Pamunkey/Ware

Creek alternative, and it points out that groundwater and the James River could incrementally produce 10 and 13-14 mgd, respectively.

COMMENT: The FWS takes exception to the Corps statement that denial of a Ware Creek reservoir would mean that no acceptable reservoir sites exist on the Peninsula.

RESPONSE: I find no discrepancy with the conclusion in the FEIS that denial of this permit implies that no environmentally acceptable reservoir site exists on the lower Peninsula. FWS, for instance, has either actively opposed, or at least not supported, every water supply reservoir either proposed for construction or considered as an alternative on the Peninsula since the Little Creek Reservoir was permitted in 1975. This includes all of the alternative reservoirs discussed in the Corps Water Supply Study and this FEIS. The 3 Dam alternative is unacceptable to FWS as described in the FEIS except with additional (unspecified) mitigation. As noted in a response to an EPA comment above, CEQ regulations require cooperating agencies with jurisdiction by law to request specific mitigation if they find the proposal lacking. FWS has jurisdiction by law under the Migratory Bird Treaty Act yet made no suggestions for additional wetland mitigation during the comment periods for either the Draft or Final EIS.

COMMENT: FWS notes that the project would have substantial adverse impacts, as described in its Habitat Evaluation Procedures (HEP) analysis (Appendix A to the FEIS). Also, the Service feels that destruction of the existing Blue Heron rookery should be assumed.

RESPONSE: I do not substantially disagree with the specific results of the HEP analysis, which was an interagency effort in which my staff participated. I also recognize that FWS has taken the position that gains in one habitat cover type cannot be measured against losses in another habitat cover type. I note, though,

that the Fish and Wildlife Service Mitigation Policy speaks of "goals" of no net loss of habitat value, and I think that in most situations one cannot convert 1200+ acres of mixed habitat cover types into open water habitat without losing some net habitat value for at least one cover type. If one refers to Figure 4-5 in the FEIS and sums the total average annual habitat units (AAHU's) lost and gained for all cover types, one finds that the 3 dam alternative would cause a loss of 754 more AAHU's than the proposed project. The HEP is only one measure of project impacts, and some of the proposed mitigation is not reflected in its results (e.g., since the HEP does not consider whether a wetland is directly connected to a downstream estuary, reconnecting the wetlands above Cranstons Pond to the Yarmouth/Chickahominy estuary is not given any credit). As stated in the FEIS, approximately 167 acres of wetlands can be counted on to be successfully created within and downstream of the Site V reservoir and in Cranstons Pond, and another 128 acres within the Site V reservoir would become vegetated to some extent with wetlands, for a total of 295 acres (167 acres worst case). In addition, breaching the Cranstons Pond dam would reconnect and enhance the value of between 340 acres (FWS estimate) and 506 acres (County estimate) of upstream wetlands which are presently isolated. Using an intermediate figure of 230 acres of wetland creation and the lower figure of 340 acres of wetland enhancement, I find that the 425 acre wetland loss will be adequately mitigated. We are in basic agreement that relocation of the existing Blue Heron rookery is speculative and should not me expected to occur.

COMMENT: FWS recommends that the 3 dam alternative be selected, with additional mitigation, over the proposed Site V alternative.

RESPONSE: Selection of the 3 dam alternative would provide only 65% of the safe yield of the proposed configuration and would also flood 65% of the wetland acreage. In terms of millions of gallons of safe yield versus acres of wetlands flooded, the

two are virtually identical. The Site V alternative would postpone the onset of mandatory water restrictions and rationing for a somewhat longer period than the 3 dam alternative, and this is a legitimate distinction. Site V also has a greater potential for future expansion, as discussed later. Further, the 3 Dam alternative would be acceptable to FWS with additional mitigation. None is specified in the November 24 letter, although when our respective staffs met at Norfolk District offices earlier in November, one of the subjects discussed was how additional mitigation could be achieved. To date I have received no such suggestions.

COMMENT: Additional alternatives should be investigated before making a permit decision on this project. The specific alternatives are enumerated below.

RESPONSE: First, I would point out that FWS recommended very strongly against two of these alternatives (Chickahominy and Pamunkey Rivers) in their comments on the Corps Water Supply Study - Hampton Roads, Virginia. The scope of the analyses which FWS now presents as being "necessary to determine the relative impacts" exceeds the scope of the entire Ware Creek EIS and rivals that of the entire Northside portion of the Corps Water Supply Study. Given FWS's historic position on these alternatives, I believe the burden falls on them to provide some evidence that they are now in some way both reasonable and environmentally preferable to Site V.

1. Chickahominy River: After considering the verbal comments of FWS, NMFS, and EPA staff at the November 19, 1987 meeting and their written comments on the FEIS, I asked James City County to provide me with clarifying information relating to the storage capacities of reservoirs of differing elevations located at Site V, and they are shown on Enclosure 1. In the course of gathering this information, the elevations of I-64 as it crosses the various branches of France and Bird Swamps were determined more exactly than before. At the lowest crossing, the

road is approximately at elevation 40 msl, or five feet above the proposed Site V pool elevation of 35 feet. This means that virtually any raising of the reservoir to accommodate a pumpover from the Chickahominy River would also require raising the interstate. This is not out of the question, but it does mean that an entirely new NEPA issue would be raised; on which would require bringing the Federal Highway Administration into the process as either a joint lead agency or, at least, a cooperating agency. A higher reservoir at Site V could, combined with another source such as the Chickahominy River, remain a possible regional alternative, and James City County may pursue such a project in cooperation with other Peninsula localities, but it clearly goes beyond the scope of this EIS, especially with the additional environmental studies which FWS recommends.

2. Pamunkey River: FWS, EPA, and NMFS have, individually and separately, recommended against supplying the lower Peninsula with Pamunkey River water on at least seven occasions between 1981 and 1987. EPA has even threatened to refer any such project to the Council on Environmental Quality. Now, with a permit application from Hanover County to withdraw water from the Pamunkey River imminent, FWS (and NMFS) recommend that this source also be reevaluated as an alternative for the lower Peninsula. I cannot accept this, absent some rational explanation from all three agencies of how one Pamunkey River withdrawal can be environmentally unacceptable while two withdrawals merit additional study.

3. Groundwater: As explained in paragraphs 2.104 - 2.108 of the FEIS, approximately 10 mgd of potable groundwater are believed available in the lower Peninsula area. This figure is corroborated in the State Water Control Board's 1987 James Water Supply Plan. A greater quantity could jeopardize the existing resource. This would be a local alternative for James City County, but would completely eliminate this as a source for the additional 30 mgd which would still be needed by the rest of the

Peninsula by the year 2030.

4. James River: As discussed in paragraphs 2.141 - 2.143 of the FEIS, a pipeline to the James River above Richmond could add an increment of 13-14 mgd of safe yield to the lower Peninsula's existing water supply system. This alternative has been strongly opposed by the City of Richmond, which has questioned its legality (see paragraph 2.141 of the FEIS). It is also discussed in more detail elsewhere in this Record of Decision and in the 404(b) (1) Analysis.

5. Mandatory Use Restrictions: This is discussed in paragraphs 2.109 - 2.111 of the FEIS. See also paragraph 2.102 under the No Action alternatives and Subpart B of the 404 (b) (1) analysis.

6. Expanded Reservoir Configurations: The 3 Dam alternative has only 78% of the capacity and 65% of the safe yield of the Site V alternative, even though the 3 Dam alternative involves reservoirs with pool elevations 5 - 15 feet higher than the Site V alternative. Therefore, raising the pool elevations of the 3 Dam reservoirs could never achieve the capacity of the yield to be had by raising the Site V reservoir, which is discussed above. The 3 dam alternative as it is presently proposed would require raising Route 168Y, but the three reservoirs could be raised to higher elevations without raising I-64. An investigation would have to be made to see if the three dams could be raised to the point where they would have the capacity to constitute a regional alternative with augmentation from the Chickahominy River before this could be considered an engineeringly feasible alternative. Had this alternative been raised during the scoping process (1981-1983) instead of the end of 1987, the extensive information the FWS's November 24 letter calls for to determine the environmental impacts on the Chickahominy River of such a proposal might have been obtained by this time. (Even so, FWS staff indicated at the November 19, 1987 meeting that <u>any</u> impact on

the Chickahominy River wetlands downstream of such an intake would be considered unacceptable by the Service.) It would be unreasonable and contrary to the intent of NEPA (40 CFR 1500.5) to call a 1-2 year halt to the decision process now while this information is gathered, especially with no clear indication that this would be either a feasible or an environmentally preferable alternative to Site V.

By letter dated November 10, 1987, the National Marine Fisheries Service (NMFS) commented on the FEIS. This letter was later submitted under a brief, November 16, 1987 cover letter from the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, which did not include any additional comments. Also, the NMFS submitted additional comments on November 12. The NMFS comments are addressed below:

COMMENT: Dissolved oxygen in the release water should have been discussed.

RESPONSE: The State Water Control Board has dissolved oxygen standards for different classes of waters in Virginia and commonly imposes these standards within their 401 Water Quality Certificate. Conditions of 401 Certificates are made a part of Corps permits. Whatever standard is imposed will have to be met by the County.

COMMENT: The wetland mitigation plan is not adequate. Wetlands created within the reservoir would not perform the same benefits for the downstream estuary as do the existing wetlands.

RESPONSE: Approximately 49 acres of tidal freshwater wetlands would be inundated by the proposed project. These would be mitigated by 27 acres of tidal wetlands created in borrow sites downstream of the dam. In his November 25, 1987 letter com-

menting on the FEIS, Dr. Glenn Kinser of the U.S. Fish and Wildlife Service stated "The Service believes, however, that this marsh creation, if successful, will adequately compensate for the loss of estuarine fish nursery habitat inundated by the reservoir." A sizeable portion of the wetlands to be inundated are located upstream of the existing Richardsons Millpond dam, so their contribution to the York River and the Chesapeake Bay is presumably similar to that of the mitigated wetlands which would be created within the proposed reservoir. The Cranstons Pond mitigation would create additional acres of wetlands with a direct downstream connection in addition to reconnecting several hundred acres of existing wetlands with the Yarmouth Creek estuary. If directly-connected wetlands are, indeed, more valuable than those located above a dam, I would expect that the functional values of these hundreds of acres would be substantially increased. The proposal described in the FEIS does not constitute 1:1 mitigation of vegetated wetlands in terms of acreage or habitat value. As mentioned above, though, NMFS was asked in November 1987 for specific suggestions for additional wetland mitigation. To date they have not done so.

COMMENT: The Cranstons Pond mitigation is not considered to adequately compensated for the potential anadromous fish habitat lost due to the implementation of Site V. NMFS believes that future regulations may require dams such as at Cranstons Pond to have fish passage devices, anyway. Also, downstream road improvements should be made immediately.

RESPONSE: The anadromous fish recovery plan NMFS mentions may or may not become implemented and it may or may not cover dams, such as Cranstons Pond, which are not presently used for any purpose subject to a State or Federal permit and are not located on a navigable water of the United States. It also probably will not require improvements in downstream road crossings which may interfere with fish passage. Enforcement of specific requirements of any such eventual plan are speculative.

If made a part of a Corps permit, restoration of this known, historic anadromous stream would be a certainty and would be enforceable under the Clean Water Act. Improvement of the Route 632 culverts would also be made a part of any Corps permit, although it would not have to be done "immediately". The Fish and Wildlife Service has recommended that the lake be drained and planted in stages, and that the dam be left in place until the lake bottom is fully vegetated. I see no reason to require the culvert work before then. The Service has also stated, in Dr. Kinser's letter mentioned above, that ". . . we believe that the Cranston's Pond breaching will provide adequate compensation for the blockage of potential river herring spawning habitat at Ware Creek if the culverts under Route 632 downstream of the dam are replaced with a bridge, bottomless pipe arch, or larger culverts set at the appropriate invert."

COMMENT: The presence of downstream shellfish should not be downplayed simply because the grounds are presently condemned.

RESPONSE: I do not consider the shellfish in Ware Creek to be an insignificant resource, but neither do I consider that they would be adversely affected by this project, except for possible temporary impacts due to construction-related turbidity.

COMMENT: Alternatives were dismissed because they would not satisfy the regional need, although the Ware Creek reservoir is a local project. The future needs should have been based not just on safe yields of the existing systems, but on water use restrictions. Groundwater, local intergovernmental procedures, and interbasin transfer should have been discussed more. NMFS recommends a regional approach to the Peninsula's water supply problems.

RESPONSE: I find it somewhat inconsistent that in the same paragraph NMFS first criticizes the FEIS for considering regional

needs instead of James City County's needs, and yet later states "In short, a Regional solution is needed". The Ware Creek project must be viewed as the County's attempt to help solve its own water supply problem which also constitutes a sizeable part of and contributes to the overall regional water supply deficit. Safe yield is a term which may be defined in many ways. Regardless, conservation and mandatory restrictions are discussed in paragraphs 2.102 and 2.109-2.111 of the FEIS, and in Subpart B of the 404 (b) (1) analysis. A deficit projection of 35-40 mgd has been corroborated by the State Water Control Board's 1987 James Water Supply Plan. Groundwater, local intergovernmental procedures, and interbasin transfer are discussed in the FEIS in Section 2 as well as in the response to the NMFS comment 3.09 found on page 5-43 of the FEIS.

COMMENT: NMFS does not recognize HEP as being a valid procedure for evaluating estuarine fish habitat.

RESPONSE: I do not necessarily disagree with NMFS' criticism of HEP, but it was specifically requested by the U.S. Fish and Wildlife Service and, presumably, is of use to them. NMFS offered no alternate methodology which it preferred, as required by 40 CFR 1503.3 (b). With the FWS in advocate of the HEP methodology, and EPA an advocate of the Adamus methodology (which it agreed, but later failed, to perform), and NMFS an advocate of no methodology, it was impossible to please all three cooperating agencies.

COMMENT: A minimum release equal to 30% of the mean annual flow should be required.

RESPONSE: I know of no justification of a 30% mean annual flow recommendation other than the Tennant Method. I concur with the Virginia State Water Control Board (October 30, 1987 letter from Mr. C.E. Easlick to Mr. Charles H. Ellis, III of the Virginia Council on the Environment) that the Tennant Method

is not applicable in tidal situations such as this. Absent a technically supported rationale for this recommendation, I see no reason to require a higher minimum release.

COMMENT: Both groundwater and the James River pipeline alternatives would provide as much or more water to the County than the Ware Creek Reservoir alternative and would be environmentally less damaging.

RESPONSE: This is partly true, but ignores many factors. A James River pipeline would cost approximately three times what the Ware Creek alternative would and is strongly opposed by Richmond area municipalities. If any kind of minimum flows are imposed on such a withdrawal, as are recommended by all environmental agencies, the pipeline would have to be hooked into a storage system (reservoir (s)) in order to store water during times when flows are less than the permitted minimums. At present the only such storage system in existence is owned and operated by the City of Newport News, and if a James River pipeline were hooked into this network, it would only increase the system safe yield by an increment of 13-14 mgd at most. As noted above, this small contribution toward the 2030 regional need would merely postpone the regional problem by a few years. If the pipeline were not hooked into the Newport News system, James City County would either have to build a reservoir of its own to store the water for use during times of low flow or else find another source of water during times of low flow. Intuitively, times of low river flow are also usually times when other surface water systems are being strained and are generally without any surplus to sell to any other users. Ten mgd of groundwater is all that is thought to be safely available in the Peninsula area, and this will undoubtedly be tapped in the future to help supply Peninsula localities. Unless polluted or depleted, the ten mgd of groundwater will remain available and will not cost substantially more to develop in another ten years than it would now. As residential development occurs around the Ware Creek watershed, though,

the proposed reservoir site may not still be realistically available in another decade.

COMMENT: Other alternatives should be investigated, or investigated further, including desalination, additional Chickahominy River withdrawals, changing the operation of Lake Moomaw in Alleghany and Bath Counties, and a combined withdrawal from the Pamunkey River for both Hanover County and James City County.

RESPONSE: Desalination is discussed in the FEIS. NMFS does not give any reason for studying it further or suggest any new ways in which it should be studied. Additional Chickahominy River withdrawals and a combined withdrawal from the Pamunkey River for both Hanover County and James City County are discussed above. This is the first time anyone has suggested that changing the operation of Lake Moomaw, near the West Virginia border, should be investigated as an alternative for this project. There is nothing to indicate how this alternative might work or any evidence that it might be environmentally preferable to Ware Creek.

By letter dated November 12, 1987, the U.S. Department of Interior, National Park Service commented on the FEIS. The Park Service's comments are addressed below:

COMMENT: A portion of Ware Creek is currently listed on the Nationwide Rivers Inventory. The proposed project would preclude further consideration of Ware Creek as a potential segment of the National Wild and Scenic Rivers System.

RESPONSE: The portion of Ware Creek currently listed on the Inventory is "from confluence with York River to Richardson Mill Pond". The minimum length of a waterway necessary for continued listing, according to the Park Service, is five miles. Between 5.1 and 5.2 miles of Ware Creek would be left intact if

the proposed project were constructed. In their letter, though, the Park Service notes that the dam "would fall within the 1/4 mile corridor of the river, and would have a substantial impact on the undeveloped quality of the stream." There is no explanation as to why the existing portion of Ware Creek listed on the Inventory does not stop 1/4 mile short of the base of the Richardson Mill Pond dam, itself a manmade structure impacting the undeveloped quality of the stream. Although the Service notes that the project would affect the scenic quality of the corridor, would reduce freshwater flows, would alter vegetational patterns, would "eliminate" anadromous fish habitat, and would have wetland mitigation areas located within the corridor, I note that under that category of "Outstandingly Remarkable Values" on the Inventory list, Ware Creek is not marked under any of the columns, which are titled Scenic, Recreation, Geologic, Fish, Wildlife, Historic, Cultural, and Other. Both Ware Creek and the Poropotank River are included on the Inventory as tributaries to a stretch of the York River, which is checked under the "Other" column as "Hydrologic (An extremely unique segment of a sparsely developed high order tidal river.)" I do not know of any reason why the five mile segment of Ware Creek downstream of the proposed dam would not continue to be, and contribute to this segment of the York River's being, a sparsely developed high order tidal river. Nevertheless, it is up to the Park Service and not the Corps to make this determination and there is no requirement for them to explain their rationale to me. There are 87 waterways and segments of waterways in Virginia listed on the Inventory which has existed in final form since 1981. None of these has been promoted to Wild or Scenic River status. Construction of this project may, for technical reasons, remove Ware Creek from further consideration as a Wild or Scenic River, but it will not, in my opinion, (supported by the Final EIS) significantly diminish its status as a very attractive, sparsely developed tidal estuary with high values for fish and wildlife habitat. In its August 10, 1980 "Memorandum For Heads of Agencies", the Council on Environmental Quality state that "Where agency action could effec-

tively foreclose the designation of a wild, scenic, or recreational river segment, the President has directed the agency to consult with HCRS" (now the National Park Service), but the Memorandum went on to note that the President's directive does not prohibit such action after the consultation and after "studying, developing and describing all reasonable alternatives". My staff has met with and corresponded with the National Park Service about this project on several occasions going back to 1983. Alternatives to the project which would not conflict with Ware Creek's Inventory status have been extensively investigated in the Draft and Final EIS's and have found to be unreasonable.

COMMENT: The project's most severe impact would be due to the diminished freshwater flows, causing significant impacts on the existing tidal freshwater wetlands.

RESPONSE: I do not agree that this is necessarily the most severe impact, however this will occur. There will be no loss in wetland acreage due to diminished freshwater flows, though, and there is no reason to believe that the assemblage of wetland plant species which will replace the existing species will be any less valuable.

COMMENT: Mitigation of anadromous fish habitat in the Yarmouth Creek watershed (Cranstons Pond) will not make up for the loss of such habitat in Ware Creek as far as listing on the Nationwide Rivers Inventory, even though both Ware Creek and Yarmouth Creek are listed on the Inventory and the mitigation may allow for future expansion of the Yarmouth Creek Nationwide Rivers Inventory segment.

RESPONSE: This is the Park Service's interpretation of Council of Environmental Quality guidelines. Since the Park Service manages the Inventory, it is up to them to make such determinations. I find this to be a rather narrow interpretation, though, especially given that Ware Creek is only potential habitat for

anadromous fish while Yarmouth Creek is a known anadromous fish stream. This is also inconsistent with an earlier recommendation from the Park Service that "the Corps develop a method to permanently conserve another stream or river reach similar in quality and size to the Ware to compensate for the adverse effects of the project" (July 29, 1983 letter from J. Glenn Eugster (NPS) to Karen Mayne (FWS)). As a factor in my public interest review, I believe that this mitigation for anadromous fish habitat will more than make up for the potential loss.

COMMENT: There is insufficient information in the FEIS for the Park Service to determine whether the 3 dam alternative would foreclose further consideration of Ware Creek as a potential National Wild and Scenic River.

RESPONSE: As noted in the FEIS on pages 5-35 and 5-36, the Park Service indicated in 1986 that the 3 dam alternative would cause the delisting of Ware Creek, and in June 1987 they indicated that the 3 dam alternative would not cause delisting. In this (November 12, 1987) letter the Park Service indicates that they do not have enough information to make a determination, so I am uncertain of the Park Service's position on this alternative. Such vacillation on the part of a Federal commenting agency is very frustrating. If the Park Service needed more information, they had several opportunities to ask for it and did not.

By letter dated November 30, 1987, the Commonwealth of Virginia, acting through the Virginia Council on the Environment commented on the FEIS. The Council's comments are addressed below:

COMMENT: The mitigation plan does not completely make up for the loss of wetlands and the large net wetland loss would, therefore, work against Virginia's Chesapeake Bay restoration efforts.

RESPONSE: Refer to responses to EPA and NMFS comments (above) on mitigation. These wetlands perform many functions and the simple comparison of existing wetland acreage with post-project wetland acreage overlooks some important factors. The existing wetlands will not be replaced with shopping centers or housing developments; the reservoir itself will create over 1200 acres of new fish and wildlife habitat. As the HEP analysis shows, some existing species will gain habitat from reservoir construction while other species will lose habitat. In terms of water quality, the reservoir will act as a very efficient sediment and nutrient trap, similar to that function presently performed by the existing wetlands. True, the reservoir will also trap most of the detritus produced by the wetlands created within and upstream of the reservoir, but those wetlands which currently exist upstream of Richardsons Millpond are already cut off from this detrital contribution. The creation of the new wetlands downstream and the breaching of Cranstons Pond will also create additional detrital contributions. The Cranstons Pond mitigation will not directly benefit the York River estuary, but both the York and the James flow into the Chesapeake Bay, so the Bay would still receive this benefit. If the Commonwealth is convinced that the project would seriously hinder its ongoing efforts to restore the water quality of the Chesapeake Bay, it can act through the State Water Control Board to deny the required 401 Water Quality Certificate. I do not feel, though, that this project would be inimical to the goal of restoring a cleaner Chesapeake Bay, for the reasons stated above.

COMMENT: This project is preferable to the 3 dam alternative, groundwater, and desalinization in terms of meeting the County's future water needs.

RESPONSE: Concur.

COMMENT: The project's effects on downstream oyster beds have been adequately addressed and mitigated.

RESPONSE: Concur.

COMMENT: The permit decision should be postponed to allow for discussions of interjurisdictional sharing of the project benefits, more regional wetland mitigation, combination of this project with other water sources, acquisition of wetland areas for future protection, and expansion of such recreational opportunities as pedestrian trails.

COMMENT: On March 30, 1987, my predecessor, Colonel Claude D. Boyd, met with Virginia Secretary of Natural Resources John Daniel and EPA Region III Administrator James Seif to discuss Virginia's role in regional water supply planning and development. At that meeting, Secretary Daniel explained that the State could not take a more active role without direction and approval by the General Assembly, which has not been forthcoming. A meeting was held at Norfolk District on November 19, 1987 with the Corps, FWS, EPA, and NMFS to discuss regional alternatives. I agreed to withhold my decision pending investigations which I required of James City County into raising of the normal pool elevation of the reservoir. There was no agreement among the agencies involved in this November meeting as to what other additional study was needed or desirable. In the interim, James City County has approached the City of Newport News about the possibility of an interconnection between this project and the rest of the existing Newport News water system. Combining this project with other sources of water remains a possibility, but it is unreasonable to withhold a decision further while the extensive informational requirements are met (see, for instance, the additional information the FWS indicates in its November 25, 1987 letter would be necessary). I believe that the reservoir as it is described in the Final EIS will provide recreational opportunities greatly in excess of what is currently available. Additional items such as pedestrian trails should be discussed between the County and the State.

By letter dated December 7, 1987, the Virginia Department of Game and Inland Fisheries commented on the FEIS. The Department notes that it supports the comments contained in the November 30, 1987 letter from the Virginia Council on the Environment; finding the environmental impacts of the project unacceptable, asking that a permit be withheld until a regional solution can be reached, and recommending 1:1 replacement of habitat. I acknowledge the Department's comments, but for the reasons I have given in my responses to the Council's letter and others, I cannot concur.

By letter dated November 9, 1987, the Virginia Department of Transportation commented on the FEIS. The Department indicated that not all of its previous concerns have been completely addressed and informed me that all work affecting roads and highways must be coordinated with and approved by the Department and/or the Federal Highway Administration. I acknowledge the Department's comments and I am willing to include this coordination and approval as a condition of a Corps permit.

By letter dated November 21, 1987, the Chesapeake Bay Foundation commented on the FEIS and included several objections to the proposed project. Many of their comments were similar or identical to those of EPA, FWS, and/or NMFS, which are addressed above. Those which are original or require an additional response are discussed below.

COMMENT: The Foundation commented on the Draft EIS that additional discussion should be given to groundwater and reverse osmosis, but they find the treatment given in the Final EIS is still inadequate.

RESPONSE: This is why it is so important for comments on a Draft EIS to be specific. The final EIS did, indeed, expand the

discussions of these two alternatives. I find the fact that the Foundation is still not satisfied to be a reflection of the generalized nature of the original comments (page 5-65 of the FEIS).

COMMENT: Combinations of several of the alternatives which were considered individually should have been investigated.

RESPONSE: Certain combinations were analyzed in the FEIS. Consideration of every conceivable permutation and combination of the individual alternatives would be an unreasonable and, perhaps, impossible task.

COMMENT: There is no mention of wetland acreage currently surrounding Cranstons Pond which would be lost due to its breaching.

RESPONSE: There exist only small, isolated pockets of wetlands around the perimeter of the Pond, due to its steep sides. Virtually all of the wetlands upstream of the dam to be breached are upstream of the Pond and would not be adversely affected.

COMMENT: The downstream mitigation areas will become brackish marshes; not freshwater marshes.

RESPONSE: Concur, assuming the VIMS modelling effort is accurate. There is no evidence that such areas have lower functional values.

COMMENT: If the accumulated sediment will be periodically removed from the headwater impoundments, they will lose much of their habitat value.

RESPONSE: Vehicular access to these areas several years after reservoir construction will be extremely difficult or impossible. For this reason, the HEP analysis assumed that these areas would eventually fill with sediment (over the 50 year planning

period) but would remain wetlands because of continued upland drainage and saturated soils.

By letter dated November 23, 1987, the Southern Environmental Law Center commented on the FEIS. Some of their comments were similar to those of EPA, FWS, NMFS, and/or the Chesapeake Bay Foundation, which are addressed above. Those which are original or require an additional response are discussed below.

COMMENT: The project would significantly degrade the waters of the United States and, therefore, would be contrary to the 404 (b) (1) Guidelines.

RESPONSE: As explained in my 404 (b) (1) analysis, this project, with the proposed mitigation complies with these Guidelines. I recognize, as indicated by the Center, that FWS has classified these wetlands as Resource Category I, but this has nothing to do with the Guidelines. Notwithstanding the FWS mitigation policy, my 404 (b) (1) analysis shows that this project would adequately mitigate for the lost functional values of these wetlands so as not to cause a significant degradation of the waters of the United States. As discussed in the responses to the National Park Service comments, above, the loss of Nationwide Rivers Inventory status for Ware Creek (for largely technical reasons) would not significantly diminish the values which led to that status.

COMMENT: The 3 dam alternative would be less damaging and must, therefore, be selected over the Site V alternative.

RESPONSE: The 404 (b) (1) Guidelines (which the Center references as requiring a less damaging alternative to be selected) specify that such an alternative be both less damaging as well as practicable. As stated above, the ratio of the 3 dam's yield to the acres of wetland flooded is identical to the ratio for the Site V al-

ternative, so as far as wetlands are concerned, the 3 dam alternative is not less damaging unless the difference in yield can be made up with another less damaging unless the difference in yield can be made up with another less damaging alternative. Simply making up the difference in yields between these two alternatives with an increment of groundwater does not make for a realistic comparison, considering the remainder of the unmet 2030 regional need (and it is the regional need that the Center agrees must be considered). Site V, all safely available groundwater, as well as an additional 20 mgd source would be needed to meet that regional need. All other alternatives to make up this 20 mgd shortfall have been shown to be either not practicable or more damaging than Site V. Unless a practicable, acceptable regional alternative or combination of alternatives can be identified to satisfy the entire 40 mgd deficit, it must be assumed that the increment of additional safe yield necessary to make up the difference between the 3 dam yield and the Site V yield would have to come from a source which would be more damaging than Site V.

On November 24 and 25, 1987, James City County submitted its comments on the FEIS and its views concerning the comments of the projects opponents. Attached to these submittals were a groundwater assessment prepared by a consultant to the County, a feasibility study of reverse osmosis prepared by another consultant to the County, and an update of the county's latest Master Water Plan. For the most part I concur with the County's comments and they are reflective of several of my own, as outlined above. For that reason I do not intend to repeat them here. I find that the County's submittals concerning groundwater and reverse osmosis tend to support my own independent findings that these are not feasible alternatives to the County. I did not verify them, though, since I did not rely on them in reaching my own findings. In its comments, the County contends that its mitigation plan provided 1:1 mitigation for wetland acreage and functional values which would be lost. For reasons explained in

my FEIS and elsewhere in this Record, I do not believe that all of this mitigation will be successful and I did not count on it in my evaluation. This is a judgement which cannot be verified for several years, and if the County is correct in its contentions, so much the better.

Other letters supporting the Site V reservoir project were received from several cities (Hampton, Newport News, Norfolk, Poquoson, Richmond, Suffolk, and Williamsburg), counties (Charles City, Chesterfield, Gloucester, Hanover, Henrico, King William, and New Kent), elected officials (State Senator William E. Fears, Delegate George W. Grayson), organizations (Appomattox River Water Authority, Hampton Roads Sanitation District, Hampton Roads Water Quality Agency, James City Ruritan Club, James River Basin Association, Peninsula Planning District Commission, Richmond Regional Planning District Commission, Virginia Peninsula Economic Development Council, and Williamsburg Chamber of Commerce), and individuals and corporations (Royal E. Bowyer, Delmarva Properties, Incorporated). Most consisted only of statements of support, and the remainder either supported my responses to certain of the adverse comments addressed above, or pointed out errors or inaccuracies in the FEIS of a technical or editorial nature which do not affect the permit decision. I accept these comments as evidence of considerable public support from not only the areas which would directly benefit directly from the project, but also from other municipalities and organizations which have experience and technical expertise in dealing with water supply issues.

11 July 88
Date

/s/ J. J. Thomas
J. J. Thomas
Colonel, U.S. Army
District Engineer

APPENDIX B

UNITED STATES ARMY CORPS OF ENGINEERS
JULY 11, 1988

Analysis of the Proposed Discharge With Respect to Section 404 (b) (1) of the Clean Water Act

This analysis is made pursuant to the 404 (b) (1) Guidelines (40 CFR 230) as printed in the Wednesday, December 24, 1980 Federal Register.

Subpart C: Potential Impacts on Physical and Chemical Characteristics of the Aquatic Ecosystem: The project would convert approximately 1217 acres of wetlands, upland forest, and existing lake habitat into a water supply reservoir. Current patterns will change and result in the reservoir trapping more sediment and probably more nutrients than the current system. This will diminish downstream turbidity somewhat, although the existing wetland system normally does a good job of sediment trapping also. The downstream sections of Ware Creek will become more saline on average, although the range of extremes will not be changed. The reservoir will probably be upper mesotrophic-to-eutrophic. The existing benthic community will change and that part of the reservoir bottom below the photic zone will not support vegetation. Periodic water level fluctuations within the reservoir will expose some denuded slopes. Existing water levels fluctuate seasonally (in nontidal areas) and daily (in tidal areas). The total aerial extent of the Ware Creek aquatic ecosystem will increase by almost 800 acres.

Subpart D: Potential Impacts on Biological Characteristics of the Aquatic Ecosystem: No threatened or endangered species will be adversely affected by this project. Finfish habitat will be greatly expanded and improved (freshwater fish, represented in the U.S. Fish and Wildlife Service's Habitat Evaluation Procedures (HEP)

analysis by largemouth bass, would have their habitat increased by 900 average annual habitat units (AAHU's), while estuarine fish, represented by juvenile spot, would have their habitat reduced by less than one average annual habitat unit). The degree of eutrophication expected would not have an adverse effect on fish habitat within the lake, based on other water supply reservoirs in the area. Of other wildlife associated with aquatic ecosystems, the HEP analysis predicted the following: pileated woodpecker habitat increased by 142 AAHU's, grey squirrel habitat decreased by 81 AAHU's, American woodcock habitat decreased by 1141 AAHU's, beaver habitat increased by 316 AAHU's, wood duck habitat decreased by 150 AAHU's, yellow warbler habitat increased by 3 AAHU's, and red-winged blackbird habitat decreased by 39 AAHU's. The entire HEP is found in Appendix A of the Final EIS and is discussed in Section 4 of that document. Downstream wetland vegetation will experience a change in species composition, due to higher average salinities. This is also discussed in Section 4 of the FEIS. Shellfish were not included in the HEP analysis, but there will be no expected adverse impact on shellfish downstream in Ware Creek except for possible increased turbidity during construction. The lower parts of Ware Creek and the adjacent York River are turbid, and the shellfish which inhabit these areas are presumably adapted to these conditions.

Subpart E: Potential Impacts on Special Aquatic Sites: The project would flood 381 acres of vegetated wetlands and up to 44 acres of vegetated shallows (the percentage of the shallows actually vegetated with rooted aquatic vegetation was never measured). Some of this acreage will be mitigated (see Subpart H, below). The contribution of these special aquatic sites will for the most part be lost to the downstream environment with regard to detrital production and wildlife habitat, although the wetlands and vegetated shallows upstream of the existing Richardson Millpond dam are already sequestered in this way. The water quality functions of these special aquatic sites, in terms of sedi-

ment trapping and nutrient retention, will continue to be performed by the proposed reservoir. The erosion protection provided by the wetlands will be mostly lost, although sediment will be trapped within the reservoir, as noted above. Flood protection is not a significant function in this case, since flooding in this area is almost entirely tidal flooding, and downstream development is sparse. Breaching the dam at Cranstons Pond will recreate the direct detrital input connection of the hundreds of acres of wetlands currently upstream of that dam, but this will benefit the Yarmouth/James system and not the Ware/York system.

Subpart F: Potential Impacts on Human Use Characteristics: The project will provide a safe yield of 9.43 million gallons per day (mgd), which will meet practically all of the County's projected 2030 water supply deficit of 10.6 mgd, and will represent approximately 1/4 of the region's 2030 deficit of 40 mgd. Water-related recreational opportunities will be enhanced. The reservoir will be surrounded by a buffer strip in which development would not be allowed. The aesthetic impact of the reservoir relative to the existing conditions will vary from individual to individual, although the number of people visiting the reservoir will probably greatly exceed the number who visit the existing site. Ware Creek is presently listed on the Nationwide Rivers Inventory, meaning that it is a potential candidate for inclusion in the National Wild and Scenic Rivers System. According to the National Park Service, this project would have the effect of removing Ware Creek from further consideration. Rivers on the Nationwide Rivers Inventory, of which there are approximately 90 in Virginia, have no legal status or protection until and unless they become listed as part of the National Wild and Scenic Rivers System. To date none of the Inventory waterways in Virginia has ever been elevated to the System. There are currently no ongoing efforts to raise Ware Creek from the Inventory to the System. The President's directive on Nationwide Inventory waterways does not prohibit actions which would cause a waterway to be delisted, provided the action agency has gone through consultation with

the National Park Service and after "studying, developing and describing all reasonable alternatives". Both have been done in this case.

Subpart G: Evaluation and Testing: The discharge material will consist of native material or material which will be chemically and physically inert (riprap). No testing is required under this subpart.

Subpart H: Actions to Minimize Adverse Effects: Many alternatives to this project were evaluated in the FEIS, including alternative dam configurations within the Ware Creek watershed, several site alternatives outside the watershed, alternatives involving nonreservoir and nonsurface sources of water, and technologically innovative alternatives. A guaranteed minimum freshwater release will help minimize downstream effects. Preservation of a buffer strip around the reservoir and adoption of restrictive zoning within the watershed will help to minimize adverse water quality effects of future human development within the watershed. Breaching the Cranstons Pond dam will mitigate any adverse effects this project may have on anadromous fish. The Cranstons Pond will also reestablish a direct connection of hundreds of acres of upstream wetlands to the downstream estuary as well as create new wetlands in the bottom of that existing pond. Wetland mitigation within the Ware Creek watershed will occur both within and downstream of the reservoir by grading upland areas, constructing small checkdams, and planting areas with wetland species. The wetland mitigation will not recreate an equivalent acreage to that lost by flooding the reservoir, however. Additional minimizing and mitigating measures are described in Sections 2 and 4 of the FEIS.

Subpart B: Compliance With the Guidelines: Viewed narrowly, as a reservoir, this project would have to be considered water dependent. Since the basic purpose is to provide water to the citizens of James City County, though, and since at least some of the water currently utilized comes from groundwater, water

supply in general is not dependent on a discharge into waters of the United States. The "rebuttable presumption" that other alternatives exist which do not involve discharges into waters of the United States has been completely satisfied, though. In every case, there has been a clear and explicit showing in the FEIS or the Record of Decision that all other alternatives are either not practicable or are more environmentally harmful than the proposed discharge/project. Since this project has significant implications both locally and regionally, both local and regional alternatives were investigated in the FEIS. Additionally, in 1984 the Norfolk District completed an extensive Congressionally-mandated study of regional alternatives (Water Supply Study Hampton Roads Virginia) and in 1987 the Commonwealth of Virginia completed its own comprehensive study of statewide water supplies and needs, including the James Water Supply Plan which covered the James City County/Peninsula area. It is noteworthy that the water supply problems in this area have been studied so extensively and independently at the Local, State, and Federal levels. Both the FEIS and the Water Supply Study were extensively coordinated with Federal advisory agencies, including the Environmental Protection Agency, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service. The Water Supply Study determined the 2030 regional deficit as being 40 mgd and, of the three principal regional alternatives given detailed reviews, only the James River pipeline alternative was rated by the aforementioned Federal agencies as being environmentally acceptable. However, at the minimum instream flows specified by these agencies, the yield of this alternative would be reduced from 40 mgd to 11 mgd, rendering it a non-practicable regional alternative. The James Water Supply Plan substantiated a regional 2030 deficit projection of 40 mgd (35 mgd with conservation) and identified a similar range of regional alternatives as the Water Supply Study, but included a 10 mgd increment of groundwater; the maximum considered safe to avoid significant degradation of regional groundwater supplies. Since the James River pipeline alternative could not supply a 30 mgd increment

(under the recommended minimum instream flows), this would still be a non-practicable regional alternative. These alternatives were also analyzed in this FEIS, and the U.S. Fish and Wildlife Service recommended a higher set of minimum instream flows for the James River pipeline alternative, which would raise the safe yield of this alternative from 11 to 13-14 mgd, but the National Marine Fisheries Service is still on record as advocating a higher minimum flow. Even 13-14 mgd is not sufficient to constitute a practicable regional alternative. No agency, organization, or individual has ever provided the Corps with any evidence that any regional alternative(s) would be both practicable and environmentally less damaging than the proposed project. The County has recently contacted the City of Newport News and offered to connect the Site V reservoir to a Newport News existing raw water pipeline which runs nearby. Connecting the Site V reservoir to the overall Peninsula water supply system could have a synergistic, as opposed to additive, effect on the regional safe yield, since it could allow water throughout the system to be stored and utilized in a more efficient manner than having multiple reservoirs operating independently.

With regard to local alternatives, many were discussed in the Draft and Final EIS's, including reservoirs in other basins in James City County, other reservoir locations and configurations within the Ware Creek basin, limiting growth, groundwater, conservation, purchase from other raw or treated water suppliers, desalinization, and wastewater reuse. The James River pipeline alternative mentioned above could provide sufficient water so as to constitute a local alternative if the County could arrange to utilize Newport News' system of reservoirs to store the water from the pipeline for use during times of low river flows (an arrangement which, without Newport News' assistance and approval, would be impossible to achieve). In response to this FEIS the City of Richmond and Richmond Regional Planning District Commission strongly opposed the pipeline alternative. In addition to stating that the FWS's analysis of this alternative (Appendix D of

the FEIS) significantly underestimated both the project's costs and Richmond's water demands, and overlooked Richmond's legal rights to 645 cfs of river flow as a separate item when figuring minimum flow requirements, the City and the Commission maintain that diverting James River water from above Richmond to the Peninsula would be an illegal interbasin transfer. Construction costs would be 3-4 times greater than the Ware Creek alternative and James City County would have to obtain agreements from the other political jurisdictions along the pipeline route. Even if the potentially significant legal barriers to this alternative are disregarded, the need for a complex contractual arrangement with Newport News, the strength of Richmond-area opposition, and the extra cost combine to make this an impracticable local alternative, although it has possible technical feasibility. Of the other out-of-basin reservoir sites, all would either involve significant adverse environmental impacts or are much too small to supply the water needed to fulfill the basic project need. The FEIS cites case law (see page 2-36) restricting a municipality's ability to limit growth by limiting water hookups. Virginia is one of a number of states which adhere to a legal interpretation known as the Dillion Rule, which means, in essence, that the power to enact laws and ordinances must be expressly granted or implied by statute (See County Board v. Brown, 229 Va. 341, 329 S.E. 2d 468 (1985); Tabler v. Fairfax County, 221 Va. 200, 269 S.E. 2d 358 (1980). Municipalities cannot, therefore, adopt and enforce local ordinances not already provided for by state law. James City County has adopted a watershed protective zoning ordinance to control the type of growth, but such zoning is allowed by statute or charter. Further restrictions on growth within the County must be within the constraints of the Dillion Rule. Limiting growth, then, is not a practicable alternative because it is not available to the applicant. Also, given the population projections for the entire region, it is likely that if growth could be limited in James City County it would merely be shifted (along with the problem) to adjacent counties or cities. Groundwater is an alternative to this project in that it is estimated that its safe yield can

be increased by approximately 10 mgd (compared to this project's yield of 9.4 mgd). If the County existed in a vacuum, groundwater would be considered to be an environmentally preferable alternative. However, since it has been well documented that the region will require an additional 35-40 mgd by the year 2030, for James City County to utilize all of the safely available remaining groundwater resources would simply foist the problem onto the other Peninsula localities. As stated in the FEIS, if Ware Creek is considered environmentally unacceptable as a reservoir site, there is no other site on the Peninsula which could be considered acceptable (based on comments from EPA, FWS, and NMFS received over the last decade). It appears likely that both Ware Creek and groundwater will be needed to meet the region's needs, as well as another 15-20 mgd source or sources. Groundwater might be considered a practicable alternative to this project in a shortsighted sense only; it could not be considered a prudent alternative or one which would be less environmentally damaging in the long term. Conservation has been estimated in the James Water Supply Plan (defined as "conservation oriented plumbing codes, leak detection, and educational programs") to reduce the region's 2030 demand from 40 to 35 mgd and James City County's 2030 demand from 16.86 to 16.49 mgd. (Note that the State's independent projections are different from, but quite close to James City County's 2030 publicly supplied demand estimate of 18.6 mgd). In the James Water Supply Plan, Virginia's conservation policy regarding further water restrictions is stated as: "[R]estrictions in water use and rationing should not be made part of a regular conservation program. These measures, which are usually implemented during emergencies, should be used as contingent measures in order to provide some reliability during drought. In other words, water supply planning should leave room for further reduction during emergency cases." Conservation cannot be considered a practicable alternative because it will not satisfy the basic project purpose of providing for the future water deficit. Obviously, since the entire region will experience a water deficit, it would not be practicable to purchase the addi-

tional water the County will need from another Peninsula locality. Wastewater reuse, as discussed in the FEIS, is so strongly opposed by the Virginia State Health Department as being unsafe that it cannot be considered a practicable alternative. Desalinization was considered as a regional and a local alternative in the FEIS, the Water Supply Study, and the James Water Supply Plan. While the technology of desalinization has been proven in other areas of the country, particularly Florida, no large-scale test has ever been performed in Virginia. (The City of Suffolk is completing testing of a small-scale electrodialysis reversal (EDR) desalinization plant under an experimental authorization from the State.) Commenting on a 1986 reverse osmosis (RO) study prepared by EPA for Gloucester County, Virginia, the Virginia State Department of Health found "The report is clearly neither independent nor unbiased", "The wide range of uncertainties associated with the RO proposals are all but ignored", and "Along these lines we would suggest that insufficient data is currently available to recommend any further consideration of RO at this time." (December 4, 1986 letter from Eric H. Bartsch, P.E., Director of Water Programs, Department of Health to Charles Ellis, Virginia Council on the Environment). In a November 26, 1986 letter from Richard N. Burton, Executive Director of the Virginia Water Control Board to Richard V. Pepino EPA Region III, commenting on the same report, Mr. Burton states "In your report (ES-9), the EPA indicates a number of actions that must be undertaken by the State. Except for setting NPDES effluent limitations, the State does not have the authority to undertake these actions and I am not aware of any federal regulations which require them." An attached staff analysis states "We believe that EPA at the outset is objecting to this particular prospective reservoir, and upon that premise starts with unproven assertions which are later "justified" by reference to the assertion. They then compound the error by requiring the VWCB to prove them wrong with costly studies and work." Since the two State regulatory agencies which would be charged with permitting any such project find so many problems with anything but a small, experimental desalinization

project, desalinization cannot be considered to be an alternative presently available to the applicant. Extrapolating from costs contained in the aforementioned EPA RO study, such a system to provide an amount of potable water equivalent to the Ware Creek reservoir would cost 1.5-3 times as much in construction costs and approximately twice as much in operating costs as the proposed reservoir. (Figures derived from pages 2-12, 2-45, and 2-46 of FEIS.) Also, as noted in the FEIS, important questions remain unanswered concerning the environmental effects of brine disposal and large withdrawals of brackish groundwater. These factors combine to indicate that desalinization is not a practicable alternative to the Ware Creek project at this time. The only other alternative suggested is the 3 dam alternative. This would provide only 65% of the safe yield of the proposed reservoir and would incur 65% of the wetland and vegetated shallows impacts. The ratio of impacts to special aquatic sites is identical to the ratio of the safe yields and this alternative would leave the County and the region with another 3.3 mgd to make up somewhere. Years of intensive study by the Peninsula localities, the State of Virginia, and the Federal Government have not identified a regional alternative (or combination of alternatives) which would be practicable and environmentally less damaging than Ware Creek, so it must be assumed that the additional 3.3 mgd needed to make up the difference in yields between the 3 dam alternative and the Site V alternative would come from a source with greater adverse impacts than Site V. Therefore, the 3 dam alternative cannot be considered less environmentally harmful than the proposed project when seen from anything but a shortsighted view.

There is no evidence whatever that this project would: (1) cause or contribute to violations of any State water quality standards (a 401 Water Quality Certificate must be issued or waived by the Virginia State Water Control Board), (2) violate any toxic effluent standard, (3) jeopardize any threatened or endangered species, or (4) affect any marine sanctuaries. With the extensive mitigation proposed, including avoidance (a rigorous analysis of

alternatives), measures to minimize impacts (watershed protective zoning, minimum flow release, and maintenance of a buffer strip), and compensation (wetland creation, restoration of an anadromous fishery, and recreation of a direct connection of hundreds of acres of wetlands on the Cranstons Pond watershed to the downstream estuary), the project should not cause or contribute to a significant degradation of the waters of the United States. It should be noted here that the project would create 1217 acres of waters of the United States where only 425 acres presently exist, and would result in a net loss of less than 50 average annual habitat units of fish and wildlife habitat (see Figure 4-5 of the FEIS). The net loss of special aquatic site (wetland) acreage must be weighed against the wetland functional values which would be created by the project (fish and wildlife habitat, sediment and nutrient trapping, desynchronization of flooding, and improvement of the detrital contribution of the hundreds of acres of isolated wetlands presently upstream of Cranston's Pond). James City County is currently pursuing negotiations with EPA Region III, the U.S. Fish and Wildlife Service, and the Virginia Department of Game and Inland Fisheries to commit up to $600,000 toward additional wetland creation and preservation. These negotiations are going on outside the Corps permit process and may or may not achieve results.

Based on the information contained in this document, the FEIS, and my Record of Decision, I find that there are no practicable alternatives to this project which are less environmentally damaging than the proposed project. I find that the gross adverse environmental impacts of the project are substantial, but mitigated to the extent that they are acceptable. (If the aforementioned mitigation negotiations between the County and the other environmental agencies are fruitful, such mitigation could be made a condition of a Corps permit (at the request of the County), but based on this 404(b) (1) analysis and my Record of Decision, I believe that the currently proposed mitigation is acceptable and adequate to prevent a significant degradation of the

waters of the United States.) There is no evidence, and there are no substantiated statements, to indicate that this project would cause any adverse cumulative impact on the Chesapeake Bay. I find that the project would have a very beneficial impact on municipal water supplies, a very beneficial impact on both lake and anadromous fish habitat, a positive impact on recreational opportunities, and no significant or long term impact on shellfish beds. The project would have a mixed impact on wildlife associated with aquatic ecosystems (three out of seven evaluation species benefiting from the project). I find that, with the imposition of the minimizing and compensation measures outlined above, this project complies with these Guidelines.

11 July 88
Date

/s/ J. J. Thomas
J. J. Thomas
Colonel, U.S. Army
District Engineer

APPENDIX C

COMMONWEALTH of VIRGINIA
STATE WATER CONTROL BOARD
2111 Hamilton Street

CERTIFICATION NO. 84-0614

401 CERTIFICATION ISSUED TO
James City County
101 Mounts Bay Road
Williamsburg, Virginia 23185

PURSUANT TO SECTION 401 OF THE
CLEAN WATER ACT (33USC SECTION 1341)

The State Water Control Board hereby certifies, subject to the special conditions listed herein, that the proposed construction of James City County's water supply reservoir on Ware Creek in James City County, Virginia, as specified in the application submitted to the Board on June 14, 1984, and updated information on July 28, 1988, and other correspondence or communications supplied to the Board by the applicant, will comply with (1) the Virginia Water Quality Standards which became effective on July 20, 1970 and which are, as amended, in full force and effect under Section 303(a) of Public Law 95-217; (2) other applicable limitations, standards, regulations, and requirements in accordance with the State Water Control Law (Title 62.1-44.2 through 62.1-44.34 of the Code of Virginia (1950), as amended). The Board further certifies that there are no other applicable promulgated effluent limitations or other limitations under Sections 301, 302, and 303 and there is not an applicable standard under Sections 306 or 307 of Public Law 95-217 presently in effect.

The applicant shall immediately notify the Board of any modification of this project and shall demonstrate in a written statement to the Board that said modification will not violate any conditions

of this Certification. If such demonstration cannot be made, the applicant shall apply to the Board for a modification of this Certification.

This Certification, after proper hearing, is subject to revocation for failure to comply with the conditions herein. It is issued in accordance with the plans for the project and certifies that the applicant and the project contractor shall not violate the Water Quality Standards to accomplish the project. Any violation of the Water Quality Standards will be subject to abatement and control under the State Water Control Law.

This Certification is valid providing the applicant complies with the following Special Conditions, which are made a part of this Certification.

SPECIAL CONDITIONS

1. That all work shall be done in such a manner as to minimize sedimentation of State Waters.

2. That the Ware Creek water supply reservoir shall be designed with the following general features:

Dam Length	1,450 feet
Crest Width	40 feet
Dam Base Width	300 feet
Upstream/Downstream Dam Slopes	3 horizontal: 1 vertical
Crest Elevation	+48 feet MSL
Upstream Drainage Area	17.4 square miles
Normal Pool Elevation	+35 feet MSL
Storage Capacity	6,355 MG
Average Depth	16 feet
Gross Yield	10.1 MGD
Minimum Downstream Release	0.4 MGD
Seepage Loss Through Dam	0.3 MGD
Safe Yield	9.4 MGD

3. That the County shall submit a Water Management/Conservation Plan for approval by the State Water Control Board at least 90 days prior to commencement of construction. The plan must include water quality monitoring and a phased conservation strategy including mandatory measures designed to reduce water consumption to essential human needs when conditions warrant such action. The Water Conservation Plan shall be based on the specific conditions noted in items 4,5,6 and 7 below.

4. That when the average runoff from the watershed for the period of the preceding 30 consecutive days is equal to, or greater than, the total of the quantity withdrawn for water supply plus 1.6 MGD the minimum release through the principal spillway should be equivalent to at least 1.6 MGD.

5. That when the average runoff from the watershed for the period of the preceding 30 consecutive days is less than the total of the quantity withdrawn for water supply plus 1.6 MGD the minimum release through the principal spillway shall be 0.8 MGD.

6. That when the release through the principal spillway has been reduced to 0.8 MGD and reservoir storage has been reduced below normal pool, the minimum release through the principal spillway shall remain at 0.8 MGD until the reservoir storage has recovered to normal pool elevation. When the reservoir has recovered to normal pool elevation, condition number four (4) or number five (5) above will prevail.

7. That the Water Management/Conservation Plan as required in condition number 3 shall be designed so that the initial mandatory water conservation measures go into effect when the spillway release flows fall below 0.8 MGD and shall be phased to full implementation and enforcement when the release flows are at least 0.4 MGD. However, this shall not preclude the implementation of voluntary measures when release flows are greater than 0.8 MGD.

8. That the County shall submit for approval by the State Water Control Board at least 90 days prior to commencement of construction the following:

   a) A plan designed to document and monitor the downstream wetlands changes which may result from the reservoir operation and

   b) A plan to monitor the development of created wetlands associated with the mitigation plan for this project.

   These plans shall be operational prior to modification of the natural flow pattern in Ware Creek.

9. That the County shall submit a Wetlands Preservation Plan which would be a supplement to the Wetlands Mitigation Plan contained in the Environmental Impact Statement (EIS) dated September, 1987. The Wetlands Preservation Plan shall be submitted for approval by the State Water Control Board's Executive Director 90 days prior to commencement of construction.

10. That the data generated from the above monitoring program shall be submitted to the Virginia Water Control Board for review and comment semi-annually.

11. That all denuded areas associated with the project's construction shall be provided with adequate ground cover or seeding upon completion of the project to arrest soil erosion. Further, phased seeding should be employed, as practicable, to minimize sedimentation during construction.

12. That the procedures set forth in the Virginia Erosion and Sediment Control Handbook, Second Edition, 1980 should be followed.

13. That any excavated of fill material stored on site should either be contained or be located in such a manner as to prevent any discharge into State waters.

14. That all construction and installation associated with the project shall be accomplished in such a manner that construction material or waste material shall not be discharged into State waters.

15. That the State Water Control Board's Permits Program, Office of Water Resources Management, Richmond Office, be notified when construction begins so that the staff will be aware of progress and inspections of the project may be made.

By: /s/ Richard N. Burton Date: 12/22/88
Richard N. Burton
Executive Director
State Water Control Board

APPENDIX D

FINAL DETERMINATION OF THE U.S. ENVIRONMENTAL PROTECTION AGENCY'S ASSISTANT ADMINISTRATOR FOR WATER PURSUANT TO SECTION 404(C) OF THE CLEAN WATER ACT CONCERNING THE PROPOSED WARE CREEK WATER SUPPLY IMPOUNDMENT JAMES CITY COUNTY, VIRGINIA

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I. INTRODUCTION

Section 404(c) of the Clean Water Act (33 U.S.C. Section 1251 *et seq.*) provides that, if the Administrator of the U.S. Environmental Protection Agency (EPA) determines, after notice and opportunity for public comment, that unacceptable adverse effects on municipal water supplies, shellfish beds, fishery areas (including spawning and breeding areas), wildlife, or recreational areas would result from the discharge of dredged or fill material, he may exercise his authority to withdraw or prohibit the specification, or deny, restrict or withdraw the use for specification, of any defined area as a disposal site for dredged or fill material. Before making such a determination, the Administrator must consult with the Chief of the Army Corps of Engineers (Corps), the property owner(s), and the applicant where there has been an application for a Section 404 permit. The procedures for implementation of Section 404(c) are set forth in the Code of Federal Regulations, 40 CFR Part 231.

EPA's regulations for implementing Section 404(c) establish procedures to be followed in exercising the Administrator's authority pursuant to that Section. Three major milestones in the process are: 1) the Regional Administrator's proposed decision to withdraw, deny, restrict or prohibit the use of a site (Proposed Determination); 2) the Regional Administrator's recommendation to the Administrator to withdraw, deny, restrict or prohibit the use of a site (Recommended Determination); and 3) the Administrator's final decision to affirm, modify, or rescind the Regional Recommendation (Final Determination). The Administrator has delegated the authority to make final decisions under Section 404(c) to the Assistant Administrator for Water, who is EPA's national Clean Water Act Section 404 program manager.

This Final Determination concerns the proposed placement of dredged or fill material for the purpose of creating a local water supply impoundment on Ware Creek in the County of James City,

Virginia that would supply water to James City County residents. Figure 1 shows the location of the proposed project on a regional scale. Figure 2 shows the location at the proposed impoundment relative to James City County.

EPA Region III's Regional Administrator has recommended that EPA prohibit or deny specification or use of described waters of the United States, including wetlands, as a disposal site for dredged or fill material in connection with the construction of any water supply impoundment in the subject area of James City County. Region III's Regional Administrator has based this recommendation upon his finding that the discharge of materials in connection with the above described activities would have an unacceptable adverse effect on wildlife, fishing areas and recreational areas. In addition, the Regional Administrator expressed his belief that several promising environmentally superior, economically feasible alternatives should be more thoroughly investigated.

This Final Determination is based on consideration of the record developed by EPA and by the Corps in this case, including public comment submitted in response to the Regional Proposed Determination, comment received at the public hearing and comment from other Federal and state agencies. This Final Determination also reflects comment and information received during EPA Headquarters' consultation pursuant to Section 231.6 of the Clean Water Act Section 404(c) regulations.

The administrative record contains references to the need for, and potential use of the proposed Ware Creek impoundment as, a regional water supply for the Lower James River/York River Peninsula.[1] However, the project as proposed is a local water

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[1] The Lower James River/York River Peninsula is comprised of the Cities of Newport News, Hampton, Poquoson and Williamsburg as well as James City County and York County. This area corresponds to the northside Hampton Roads area or region for which the local, state and Federal regional water supply studies have been conducted.

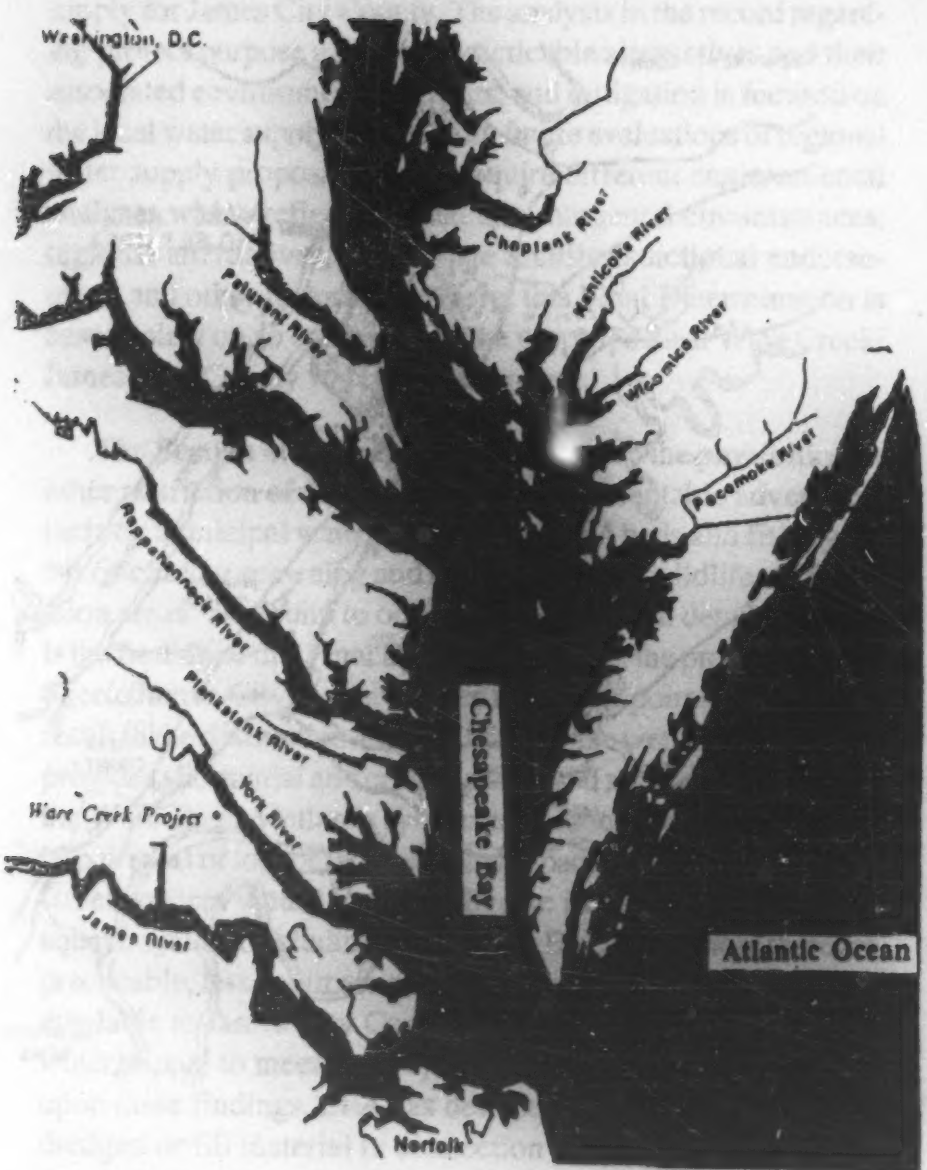

FIGURE 1. Location of Ware Creek project on a regional scale

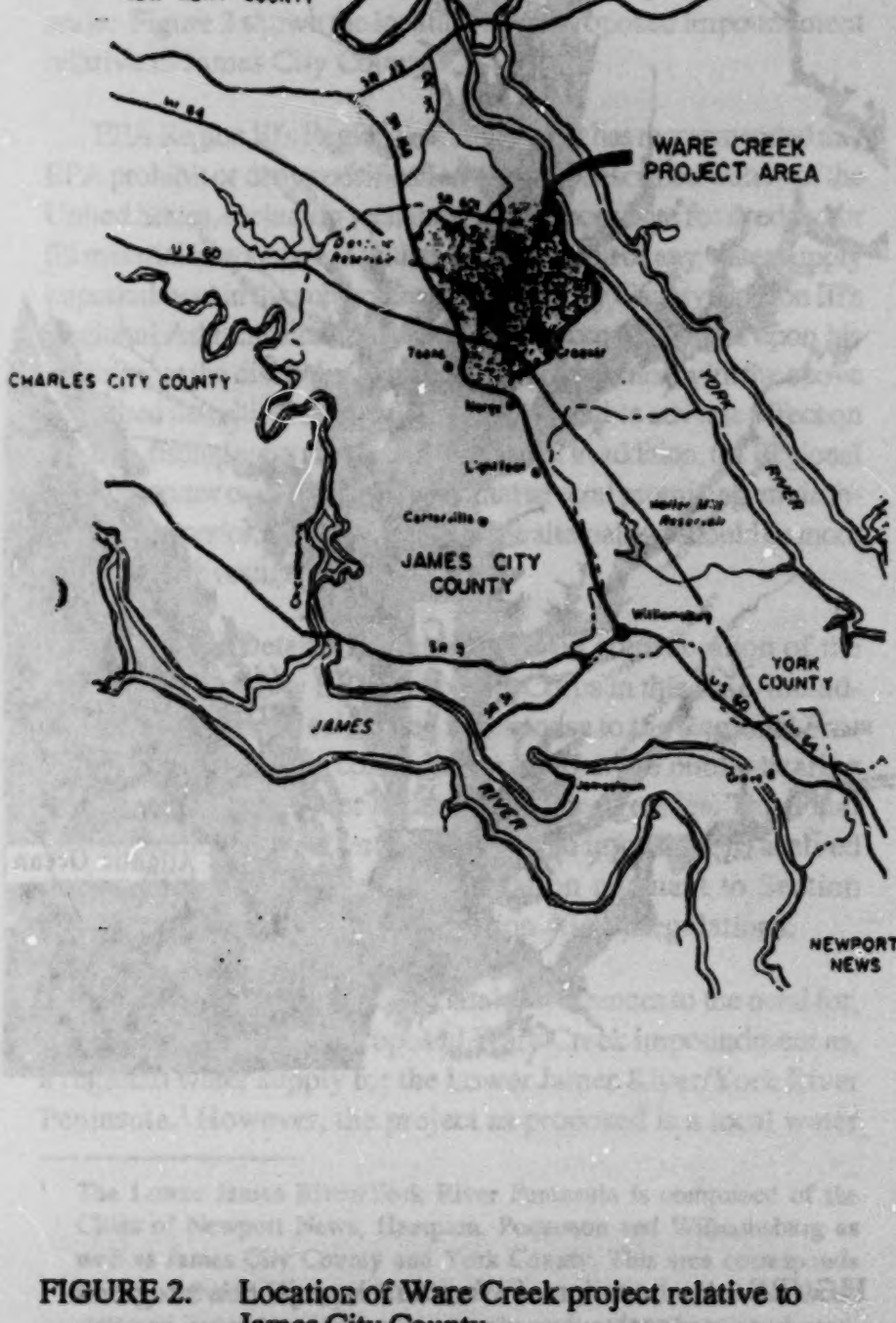

FIGURE 2. Location of Ware Creek project relative to James City County.

supply for James City County. The analysis in the record regarding project purpose and need, practicable alternatives and their associated environmental impacts, and mitigation is focused on the local water supply project. Any future evaluations of regional water supply proposals would require different environmental analyses which reflect regional environmental circumstances, regional alternatives, appropriate multijurisdictional endorsement, and other factors. Therefore, this Final Determination is based solely on an evaluation of the proposed local Ware Creek/ James City County water supply project.

The Section 404(c) regulations authorize the prohibition or other restriction of fill at sites where "unacceptable adverse effects on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreation areas" are found to occur. As described in detail below, it is the finding of this Final Determination that the proposed Ware Creek/James City County water supply impoundment would result in the destruction and loss of a diverse wetland habitat that provides substantial and critical ecological support to wildlife in the Ware Creek wetlands system and associated areas. Further, impairment or loss of the functional capacity of the current Ware Creek system would have an adverse impact on downstream aquatic systems including Chesapeake Bay. In addition, there are practicable, less environmentally damaging alternatives that are available to James City County for the purpose of providing a water supply to meet the projected need for the County. Based upon these findings, EPA has determined that the discharge of dredged or fill material in connection with the proposed Ware Creek/James City County local water supply impoundment would result in unacceptable adverse effects on wildlife.[2] This Final Determination therefore modifies the Regional Recom-

[2] For the purposes of this Section 404(c) Final Determination, "effects on wildlife" include impacts to ecosystem integrity, nutrient pathways, and all other life requisites of animal, including fish, species.

mended Determination and restricts the designation of the subject waters of the United States as discharge sites for dredged or fill material expressly for the purpose of establishing a local water supply for James City County and as such prohibits the placement of fill for that purpose. This Final Determination does not pertain to other types of filling activities or to proposed filling activities in other waters of the United States within the Ware Creek watershed. Other proposals involving the discharge of dredged or fill material on the waters of the United States at issue will be evaluated on their merits within the Corps of Engineers' Section 404 regulatory program.

II. PROJECT DESCRIPTION AND BACKGROUND

This Final Determination concerns waters of the United States affected by the local water supply impoundment proposed by James City County, Virginia and activities proposed as mitigation for associated adverse environmental impacts. Review of the Recommended Determination submitted by Region III and the administrative record pertaining to this case indicates that EPA Region III's Recommended Determination accurately reflects background events leading to consideration of the Recommended Determination. The following sections of the Recommended Determination are hereby adopted as part of this Final Determination: Sections III, PROJECT DESCRIPTION (pages 5-6); Section IV, PROJECT HISTORY (pages 6-9); and Section VI.C, MITIGATION (pages 41-42). Below are summary descriptions of the proposed project, mitigation plan and project history based on the Recommended Determination and administrative record, and of EPA Headquarters actions subsequent to the Recommended Determination.

A. PROJECT DESCRIPTION

1. The Water Supply Impoundment

This Section 404(c) action addresses the proposed placement of dredged or fill material in the waters of the United States, as described in the Recommended Determination. James City County, Virginia proposes to discharge dredged and/or fill material into the Ware Creek basin to construct an earthen dam to impound water for a 1,217 acre water supply reservoir. The dam would be constructed on a northwest-southeast axis across Ware Creek and France Swamp (Figures 1 and 3). The proposed reservoir would be located along the border of James City and New Kent Counties. The dam would be 1,450 feet long, 40 feet wide at the crest and 300 feet wide at the base, with a crest elevation of +48 feet mean sea level. The reservoir would have an average depth of 16 feet. Capacity of the reservoir would be 6,355 million gallons at a normal pool elevation of +35 feet mean sea level. The project would provide a safe yield[3] of 9.4 million gallons per day (mgd).

Construction of the impoundment would result in inundation of 425 acres of waters of the United States and 792 acres of primarily forested upland. Of the 425 acres of waters of the United States, 381 are vegetated with scrub-shrub, herbaceous or forested wetland vegetation and the remaining 44 acres are open water less than two meters deep.

2. The Mitigation Plan

James City County proposed plans for mitigating adverse environmental impacts associated with the construction of the proposed water supply impoundment in Ware Creek. As described in the administrative record, the mitigation plan consists

[3] Safe yield is defined as a water supply sufficient to provide water, without depleting the source, during the drought of record, which in this case occurred in 1980-1981. James City County has advised that it would not impose water use restrictions unless the circumstances exceeded the drought of record.

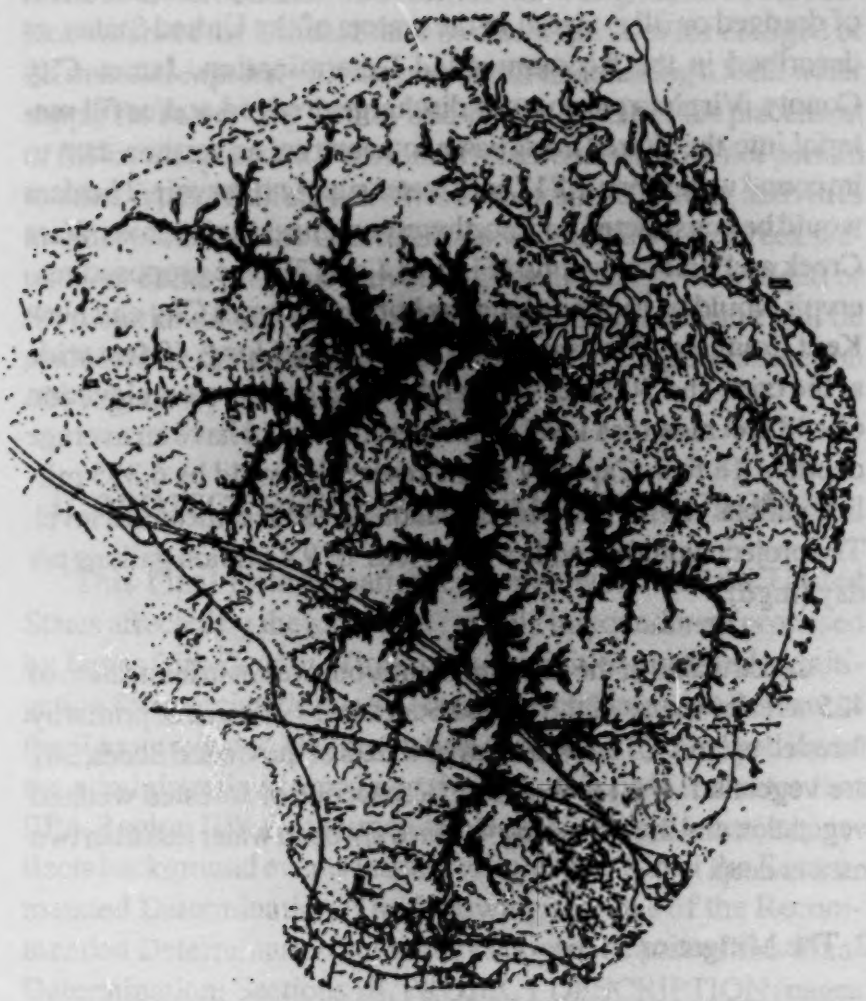

FIGURE 3. Location of Ware Creek Project relative to Ware Creek watershed.

of: 1) wetland creation and wetland and upland preservation in the Ware Creek/York River watershed; 2) creation of nesting habitat as mitigation for an existing Great Blue Heron rookery in the Ware Creek watershed; 3) wetland creation and breaching of an existing dam in Yarmouth Creek to reconnect wetlands and reestablish anadromous fish access in the James River watershed; and, 4) extensive preservation of wetlands and uplands in Yarmouth and Powhatan Creeks in the James River watershed. The proposed mitigation plan will be discussed in greater detail in Section V of this Determination.

B. PROJECT HISTORY

As previously stated, review of Region III's Recommended Determination and the administrative record revealed that the Recommended Determination's discussion on project history accurately reflects events leading to consideration of the Regional decision. EPA has raised concerns about environmental impacts of the project since the initial planning stages of the proposed Ware Creek reservoir. In addition, faced with a trend of locally-oriented and uncoordinated proposals for water supply impoundments, all with potentially serious adverse environmental impacts, EPA has also voiced the need for comprehensive water supply projects to address the demand for the Lower Peninsula, in order to minimize adverse impacts to the environment. Indeed, EPA had co-sponsored a symposium with the Corps of Engineers and the Commonwealth of Virginia to address regional water supply solutions. In addition, EPA and the Corps have attempted, albeit unsuccessfully thus far, to convince the Commonwealth of Virginia to take the lead in addressing solutions to the region-wide, inter-jurisdictional water supply problems of the Lower Peninsula. The current institutional framework of the state is such that active state involvement appears to be needed to facilitate the degree of inter-county cooperation necessary to establish a regional water supply solution.

C. EPA HEADQUARTERS ACTIONS

After the close of the public comment period on EPA Region III's Proposed Determination, EPA Region III submitted a Recommended Determination to EPA Headquarters. In the Recommended Determination, dated February 17, 1989, EPA Region III's Regional Administrator recommended that EPA prohibit or deny the specification, or the use for specification, of portions of the Ware Creek floodplain as an area for disposal of dredged or fill material for the purpose of creating an impoundment for water supply. The Recommended Determination was based upon the finding that construction of such an impoundment on Ware Creek would have unacceptable adverse impacts on wildlife, fishing areas and recreational areas. In addition, the EPA Regional Administrator believed that less environmentally damaging, and economically feasible, alternatives should be more thoroughly investigated. The Recommended Determination was received at EPA Headquarters on February 17, 1989, and the administrative record on March 14, 1989.

EPA subsequently notified by letter representatives of James City County, Mr. John Elmore (Chief of the Operations and Readiness Division, Corps of Engineers), and 65 individuals, businesses or representatives of same who own property located within the project site of their opportunity for consultation. Pursuant to Section 231.6 of the Section 404(c) regulations, the consultation is provided so that the Section 404 permit applicant(s) and the Corps may present information which reflects the intent to take corrective action to prevent unacceptable adverse effects from occurring as a result of the subject activities.

In a letter from Mr. John Elmore dated April 24, 1989, the Corps responded that based on its previous review of the case and the Norfolk District's proposed decision, it did not find any basis for elevating the case for high level review and did not intend to pursue any further action on this case.

Three property owners or representatives thereof also responded to EPA's consultation notification letter. One property owner expressed by telephone her support for EPA Region III's Recommended Determination. Another property owner or representative thereof indicated by telephone her interest in EPA's position in the case. In addition, Chesapeake Corporation, the major property owner of the proposed project site, responded by letter dated April 13, 1989, and indicated its support for the Ware Creek water supply impoundment. Other major issues raised in its letter included: 1) that groundwater should be regarded as a limited component to meet the water supply needs and not as a total solution to the water supply problem; 2) that it intends to develop its property in the Ware Creek basin, with or without the water supply impoundment; 3) that recreational opportunities mentioned in the Recommended Determination have not been accurately described in light of its development plans; and 4) that the "No Project" scenario of the Habitat Evaluation Procedure (HEP) analysis is not consistent with its master plan for development.

Representatives of James City County also responded to the consultation notification by requesting a meeting with the Acting Assistant Administrator for Water. This meeting was held in the morning of April 13, 1989 at the EPA Headquarters Office in Washington, D.C. During the consultation meeting, representatives of James City County did not challenge Region III's conclusions with respect to resource values and adverse environmental effects. However, they did raise four major points. First, they believe that they have exhausted or will exhaust all alternatives (including water conservation measures) and do not see a solution, aside from the Ware Creek impoundment, to meet the projected water supply needs of James City County and the Lower Peninsula region. In addition, even when faced with a projected water supply deficit, James City County asserted it cannot control growth under current state law. Second, they feel that they have not ignored their natural heritage of valuable wetlands a evidenced by the proposed mitigation plan. They mentioned that

benefits of the mitigation plan include preservation of certain valuable wetlands which are being considered for development. Third, the proposed Ware Creek water supply impoundment could be incorporated into a regional water supply system by interconnecting it with the Little Creek reservoir operated by Newport News. However, representatives from James City County also acknowledged that there is no indication that Newport News is willing to pursue this plan with James City County. Fourth, they also repeated the concern they had raised to EPA Region III that EPA's administrative record was incomplete since it did not contain the entire Corps administrative record on the Ware Creek reservoir. In response to this, EPA staff indicated that EPA had reviewed the Corps' files and taken copies of all documents believed to be relevant to the Section 404(c) determination. (The Corps had not compiled an index of documents comprising its record.) EPA stated further that if representatives of James City County believed that EPA had failed to consider documents believed by the County to be relevant, it was incumbent upon the County to identify specific Corps documents that they felt were absent from EPA's record and relevant to EPA's findings. Representatives from James City County indicated that they knew of no such documents at that time. EPA has since obtained and reviewed all outstanding documents from the Corps administrative record.

Subsequent to the consultation meeting, representatives of James City County also forwarded a letter to EPA Headquarters with attached additional written comments which were then included in the administrative record for review. The letter, dated April 18, 1989, reiterated the County representatives' belief that Recommended Determination: 1) would leave the citizens of James City County without a solution to their legitimate water needs; 2) did not take the County's mitigation proposal into account; and, 3) relies upon conclusions of consultants that the County believes are based upon inappropriate criteria and generic information, and not supported by hard evidence and sound

methodologies. The letter attachments included: comments on the technical aspects and conclusions of Region III's Recommended Determination from two consultants on behalf of James City County; a response by the County's Environmental Engineer to the comments regarding water conservation made by the Southern Environmental Law Center; and, a letter by the County's consulting engineer on the regional benefits of an interconnection of the proposed Ware Creek reservoir with the Newport News raw water system. In addition, James City County later submitted a complete evaluation prepared for Newport News of such an interconnection.

Pursuant to Section 231.6 of the Section 404(c) regulations, EPA Headquarters' original deadline for issuing the Final Determination affirming, modifying or rescinding the Recommended Determination was May 15, 1989. However, EPA Headquarters determined that obtaining and reviewing documents from the Corps record required additional time, and that the issues presented by representatives of James City County during consultation warranted additional review of the administrative record for the Section 404 permit decision on the Ware Creek proposal to ensure that all relevant facts were considered. Therefore, pursuant to Section 231.8 of the Section 404(c) regulations, the deadline for the Final Determination was extended to June 16, 1989. Notice of this extension appeared in the Federal Register on May 16, 1989 (54 Fed. Reg. 21125). EPA headquarters subsequently determined that additional time was required to review documents from the Corps record to ensure a thorough examination of all relevant issues, and therefore, extended the deadline for the Final Determination to July 10, 1989. Notice of the second extension appeared in the Federal Register on June 19, 1989 (54 Fed. Reg. 25753).

The Chesapeake Bay Foundation (CBF) and the Southern Environmental Law Center (SELC) also requested a meeting with the Acting Administrator for Water to discuss their concerns

over the proposed Ware Creek reservoir. This meeting was held in the afternoon of April 25, 1989 at the EPA Headquarters Office in Washington, D.C. Major points raised by representatives of CBF and SELC included: their support for a Section 404(c) veto of the proposed Ware Creek impoundment; alternatives including desalinization, ground water and conservation measures should be given more consideration, and a combination of different alternatives may serve as an alternative to the Ware Creek impoundment; regional solutions to meet projected water demands are needed, as opposed to individual proposals to meet water supply deficits, to prevent piecemeal loss of wetlands; and, it is SELC's opinion that statutory authority exists that would enable the State Water Control Board to conduct water supply planning to foster regional water supply solutions, in addition to providing water need projections. In addition, subsequent to the meeting, SELC forwarded to EPA Headquarters copies of state statutes pertaining to the State Water Control Board, the Virginia Groundwater Act, and the 1989 Surface Water Management Areas law.

On April 28, 1989, the Acting Assistant Administrator for Water and other EPA staff, accompanied by representatives of James City County, visited various portions of the proposed reservoir site in the Ware Creek watershed, the existing dam in Yarmouth Creek and the Little Creek reservoir operated by Newport News. Prior to the visit, EPA had told representatives of James City County that this was strictly a site visit and not a second opportunity for a Section 404(c) consultation. The County did not raise new factual issues or present new factual claims not previously made.

On May 8, 1989, EPA Administrator William K. Reilly met, at their request, with Senators John Warner and Charles Robb to discuss EPA's recommended Section 404(c) determination for the Ware Creek water supply impoundment. Other attendees of the meeting included: Mr. John Rayfield of Congressman Herbert

Bateman's Office; Secretary John Daniel and Mr. Richard Burton from the Commonwealth of Virginia; Representatives from James City County; EPA Acting Assistant Administrator for Water Rebecca Hanmer; Office of Wetlands Protection Director David Davis; and, other EPA staff. A summary of the meeting has been entered into the administrative record. Major points raised by the representative from James City County included: that the County believes that although "valuable" wetlands would be lost due to construction of the Ware Creek reservoir, they would be compensated for by the mitigation plan; that the County would benefit from the planning associated with the project since it could not preclude development of the project area otherwise; and, that the Ware Creek impoundment could be part of a regional water supply solution, although the County has not reached any agreement with other jurisdictions involved. EPA expressed the need for inter-jurisdictional cooperation in addressing water supply demands and its concern for cumulative loss of wetlands. Representatives from the Commonwealth of Virginia indicated that they support the Section 401 certification issued for the project, and that there are new state laws which recognize the state's role in water supply planning throughout the state but implementation of these laws will take some time.

Substantive issues raised during consultation will be addressed within the context of the discussion and analysis of this case throughout the rest of this document.

III. DESCRIPTION OF PROJECT SITE

This Final Determination concerns waters of the United States affected by the proposed impoundment, known as the Ware Creek/James City County water supply reservoir. Review of the Recommended Determination and the administrative record pertaining to this case confirms that Region III's Recommended Determination accurately reflects environmental descrip-

tions of the proposed project. Section V of the Recommended Determination, NATURAL RESOURCE FUNCTIONS AND VALUES (pages 9-18), is hereby adopted, except to the extent indicated below, as part of this Final Determination. For additional information on the physical and environmental characteristics of the subject site, the administrative record, particularly the Final Environmental Impact Statement prepared by the Corps of Engineers, provides a substantial amount of relevant material. Below is a summary description of the proposed project site based on the Recommended Determination and the administrative record.

Changes to the Recommended Determination:

The figures for estimated annual primary production in Table 5 of the Recommended Determination and any other references in the text of the Recommended Determination or its Appendices to annual primary production were calculated improperly. Those figures and any other figures derived from the use of Table 4 in the Recommended Determination should be multiplied by the number 0.4047 to correct for this error. This change does not alter relative percent-loss figures presented in the Recommended Determination.

For the purposes of this EPA Section 404(c) Final Determination, EPA does not recognize or use the 10 percent change threshold for determining significance chosen by the consultants utilized by EPA during preparation of the Recommended Determination. Also, EPA does not concur with the percentage change figure for the potential reduction of detrital material exported from Ware Creek watershed as submitted by ECOLSCIENCES INC Appendix B p.16.

A. SITE DESCRIPTION

1. Hydrology

The project site for the proposed Ware Creek impoundment lies within the coastal plain of the Tidewater region in southeastern Virginia. Ware Creek and associated tributaries, France Swamp, Cow Swamp and Bird Swamp, drain a generally undisturbed watershed of approximately 18 square miles with a majority of the basin land cover currently in hardwood and mixed pine-hardwood forest. The proposed water supply impoundment dam sit is situated approximately 1000 feet downstream of the confluence of Ware Creek and France Swamp and is located approximately 4.72 miles upstream of the mouth of Ware Creek where it empties into the York River. The proposed impoundment would be approximately 1217 acres in surface area. The Ware Creek system discharges into the western side of the York River and is approximately 23 river miles from the mouth of the York where the River empties into Chesapeake Bay.

As stated in the Corps Final Environmental Impact Statement (EIS), a majority of the Ware Creek drainage basin lies above the proposed dam site. While drainage from Bird Swamp is interrupted by a minor impoundment, Richardson's Millpond, flow from the remainder of the Ware Creek basin is unobstructed by manmade impoundments until the Creek empties into the York River. Research conducted by the Virginia Institute of Marine Science shows that Richardson's Millpond drains approximately 37 percent of the Ware Creek watershed area above the proposed impoundment. There are relatively few roads crossing the Creek and residential and industrial development is absent from the immediate vicinity of the proposed impoundment as well as edges of the Creek.

The geology of the Ware Creek watershed is characterized by well-drained soils and relatively steep-sloped topography.

Because Ware Creek empties into a tidal brackish stretch of the Lower York River Basin, the system normally experiences a semi-diurnal tidal flux which carries brackish waters well into the major creek channels. The relationship of the geomorphology of the Ware Creek drainage and the exchange between the freshwater portion of the Creek and the associated brackish tidal system results in considerable variability in the natural parameters affecting the physical and chemical hydrology of Ware Creek. The administrative record indicates that while there is little reliable data regarding freshwater discharge of Ware Creek, the Creek exhibits significant fluctuations in freshwater flow. Although the average stream flow at the proposed dam site is estimated to be approximately 12.4 million gallons per dat (mgd) or 19.2 cubic feet per second (cfs), the maximum figure for flow into the reservoir is estimated at 12,485 cfs. The administrative record also indicates that the variable discharge of freshwater from the Creek and the Creek's depth relative to the estuarine tidal influx of the York River results in large scale fluctuations in the salinity of waters in the creek system over relatively short periods of time. Site measurements during long-term dry weather conditions indicate that short-term (tidal cycle) salinity variations can be up to 8 parts per thousand (ppt) and long-term variations differ by as much as 16 ppt.

Ware Creek's present hydrologic setting and environment sustains a broad variety of aquatic and wetland functions which are regarded as valuable environmental attributes of the Creek system. The fundamental asset of the current system is maintenance of relatively undisturbed, highly diverse wetland environments which accompany the dramatic physical and chemical interactions of pulsed freshwater flow and estuarine tidal flux. Further, the land use practices of the Ware Creek watershed and the lack of significant alterations to land adjacent to the Creek accommodate the maintenance of this system. In sum, these conditions play a substantial role in supporting the overall plant and animal species composition and richness of the Ware Creek

watershed.

The geology and hydrology of the current Ware Creek basin, and particularly the hydrology of the Creek itself, serves to regulate the accumulation and transport of detrital material and manage nutrient flux through the vegetated wetland system and into the York River. In spite of the sediment and nutrient trapping effects of Richardson's Millpond, under the present hydrological regime for the remaining watershed which is not affected by Richardson's Millpond, dissolved inorganic materials, dissolved organic matter and particulate organic matter are exported from the Ware Creek aquatic system and become part of the normal input of dissolved and particulate matter transported by the York River into the Chesapeake Bay. EPA notes that exact quantitative measurement of the amount of material exported from the watershed is not feasible. In reviewing this component of the Ware Creek system EPA is relying upon the unquestionable transport and export of materials through and out of the Creek's aquatic system.

2. Vegetation

As previously stated, a majority of the Ware Creek watershed is undeveloped and is characterized by upland areas dominated by hardwood and mixed pine-hardwood forest. The administrative record indicates that while approximately 67 percent of the watershed is forested, nearly 40 percent of the current forested area was previously managed as pine plantation. Agricultural, commercial and residential land use accounts for approximately 25 percent of the watershed area and the remaining 8 percent of the basin consists of wetlands and open waters.

The Recommended Determination and the administrative record indicate that tree species found in the Ware Creek basin include a range of mature (30-50 year old) species including oaks and hickories and that much of this community type is found on

the upland side slopes of the basin. These forested upland tree species provide abundant mast crop and contribute structural diversity to wildlife habitat. Understory vegetation in upland areas of the watershed includes fruit bearing tree species such as Dogwood and Holly as well as various fruit bearing shrubbery such as Blueberry and Huckleberry. As noted above, the Ware Creek basin has been actively managed for the production and harvest of softwood pine species, with the principal evergreen species found in the resulting mixed pine-hardwood portions of the watershed comprising immature Loblolly and Virginia Pine.

The Ware Creek watershed contains approximately 1168 acres of vegetated wetlands and open water systems. The vegetated wetlands found in the Ware Creek basin can be divided by large-scale community type into herbaceous, forested and scrub-shrub and the open water systems can be divided into estuarine, palustrine, and lacustrine open water. EPA notes that the Corp's Final EIS figure 3-4 identifies 44 "WETLAND TYPES FOUND IN THE WARE CREEK WATERSHED." EPA recognizes that these wetland types are based on the Classification of Wetlands and Deepwater Habitats of the United States (Cowardin, et al., 1979), and as such represent classifications officially adopted by the U.S. Fish and Wildlife Service. The classification system presented in the document is based on wetland habitats and therefore reflects important information useful in the evaluation of the Ware Creek area in terms of wildlife habitat suitability.

EPA recognizes the difficulty in obtaining accurate estimates of productivity in vegetated communities, particularly aquatic communities affected by tidal influence, and that representative approximations of primary production rates do not reflect absolute values for the subject watershed. EPA notes that the values presented in Table 4 of the Recommended Determination are approximations of primary production rates for ecosystem types similar to those found in Ware Creek and that extrapolation of those figures to the subject area provides relative estimates of

primary production values for the system. EPA regards the use of approximations to provide qualitative analyses of the relative productivity of the communities in Ware Creek as reasonable and useful for the purpose of this determination. Approximate annual production values for wetland cover types encountered indicate that wetlands in the Ware Creek basin are typically the most productive plant communities in the watershed with scrub-shrub and herbaceous wetlands exhibiting relative estimates of net primary production greater than double that of the upland forested communities. Approximate values for forested wetlands show essentially equivalent rates of net primary production as for upland forested areas. Of the open water cover-types, estuarine open water communities exhibit approximate values of net primary production nearly one and one-half times that of upland forested areas. Representative figures of net primary production values for lacustrine open water communities of the type which would be created by implementation of the proposed Ware Creek reservoir are least of all cover-types found in the Ware Creek basin and are less than one-half that of typical values for upland forested communities. Most importantly, representative figures of net primary production values for lacustrine open water communities of the type which would be created by implementation of the proposed Ware Creek reservoir indicate that these systems are approximately 20 per cent as productive as typical scrub-shrub and herbaceous wetland cover types.

Herbaceous wetlands, the most prevalent wetland type found in the Ware Creek basin, are typically vegetated by Cordgrass and Needlerush species in the tidal saline portions of the Creek near the creek mouth. Upstream of the creek mouth, where tidal influence and salinity decrease, wetland vegetation grades from cordgrasses and bulrushes to a range of species including Wild Rice, Cattails, Arrow Arum, Pickerelweed and Bulrushes. Tidal freshwater portions of the Creek support a diverse plant association which are more structurally complex than tidal estuarine communities. Further, edges of the area are characterized by

upland tree and shrub species which are excluded from the more hostile saline-estuarine environments downstream and which benefit from the periodic tidal freshwater flooding. In non-tidal freshwater portions of Ware Creek, including areas influenced by Beaver activity, herbaceous wetland communities are characterized by Cattails, Burreeds, Rice Cutgrass, Smartweeds, Sedges, and Wild Rice. Forested wetland systems account for approximately 28 percent of the wetlands in Ware Creek. The overstory of these systems is dominated by tree species such as Sycamore, Green Ash, Red Maple, Black Gum and Sweet Gum. Understory species of tree and shrub in these systems include Willow, Alder, Holly, Spice Bush, Blueberry, Buttonbush and Viburnum. Finally, scrub-shrub wetlands account for approximately seven percent of the Ware Creek wetlands. Species typical of these systems include Alder, Black Willow, Buttonbush, saplings of various forested wetland species and several of the herbaceous species found in non-tidal wetland areas.

The Recommended Determination and administrative record indicate that Beaver have had a significant influence on freshwater wetlands in the Ware Creek basin. Beaver activity has resulted in the obstruction of portions of the Creek and its tributaries and consequently has generated a complex mix of herbaceous, forested and scrub-shrub wetlands which contains plant species typical of all of those wetland types.

The plant communities present in the Ware Creek watershed, including those found in the proposed project site, exhibit a wide range of valuable natural functions and environmental attributes. The upland forested areas provide significant wildlife habitat in the form of both food and cover. Overstory tree species provided hard mast material for many terrestrial mammals as well as resting, nesting and cover habitat for birds and tree dwelling wildlife. Understory vegetation in the upland areas provides additional mast material in the form of fruits and berries as well as resting, nesting and escape cover for various wildlife species.

The diverse wetland communities in the Ware Creek watershed also function to provide significant and valuable wildlife habitat. In particular, the tidal freshwater portions of the system provide substantial ecological niches and habitat opportunities due to the structural complexity of that community and the abundant and diverse food-producing vegetation. Many of the plant species found in the wetland communities of Ware Creek provide food and cover for waterfowl such as Black Duck and aquatic wildlife such as the River Otter as well as other birds and mammals. In addition, the vegetated wetland habitat currently found in Ware Creek is critical for certain life stages of various amphibians and reptiles. Vegetated wetland areas of the Creek which exhibit sufficient water levels serve as spawning and nursery grounds for resident fish populations and are used by mobile fish populations moving throughout the brackish/freshwater-estuary/creek system. Correspondence from the National Marine Fisheries Service contained in the administrative record indicates that Ware Creek is a suitable site for spawning of anadromous fish species during periods of high fresh water flow and sufficient fish population levels.

As noted previously, except for the Richardson's Millpond impoundment and minor obstacles caused by Beaver activity, the aquatic systems within the Ware Creek basin are free from major obstructions which could impair the movement and migration of fish and other aquatic wildlife. In addition, the Ware Creek creek-wetland system serves as a relatively unobstructed corridor utilized by wildlife species which preferentially travel the corridor.

The administrative record suggests that in addition to direct wildlife habitat values, the current wetland systems also have the ability to capture and retain nutrients from basin runoff and process those nutrients for export. The juxtaposition of tidal estuarine, tidal freshwater and non-tidal freshwater wetlands creates a diverse vegetative continuity which influences nutrient cycling

and nutrient transport from the Creek's freshwater system into the York River and Chesapeake Bay systems. The Ware Creek vegetation communities also contribute a significant amount of litter material which is available for nutrient cycling and part of which is exported to downstream aquatic systems. Particularly, detritus derived from vegetation in tidal freshwater portions of the Creek system is considered more palatable compared to detritus derived from higher salinity estuarine portions of the system. Because the Ware Creek vegetated aquatic system is basically unobstructed, except for Richardson's Millpond, this attribute is particularly applicable to the wetland communities of the Creek. The administrative record indicates that, in addition to these nutrient cycling support functions, the vegetated wetland communities in the basin also serve to: assimilate peak steam flows; trap sediment; and stabilize the stream bank and deter bank erosion.

B. WILDLIFE

1. Habitat Evaluation Procedures

As part of the Clean Water Act Section 404 permit and Environmental Impact Statement review, an analysis of project impacts on habitat values was prepared using Habitat Evaluation Procedures (HEP) developed by the U.S. Fish and Wildlife Service. These standardized procedures are routinely used by regulatory and resource agencies to evaluate potential environmental effects of a proposed activity. A thorough description of the HEP analysis performed for the proposed Ware Creek impoundment is provided in Appendix A of the Corps Final EIS for the Ward Creek project. In summary, the HEP analysis prepared for the Ware Creek project generated numerical values based on wildlife cover-type habitat recognizing selected habitat characteristics of certain representative wildlife species. Species were chosen to represent the range of currently existing habitat cover-

types and to reflect changes in cover-type values expected as a result of the project. The final Ware Creek project HEP analysis provides information based on overall future adverse and beneficial impacts to the watershed including estimates of those impacts associated with commercial, residential and industrial development as well as successional changes in the natural watershed environment. The analysis also accounts for environmental benefits associated with the successful implementation an achievement of proposed project mitigation activities as they were proposed when the analysis was performed in 1987. The HEP procedure allowed analysis of cover-type changes for various time periods up to 50 years with and without implementation of the proposed Ware Creek dam and impoundment.

While EPA acknowledges the usefulness of the watershed-wide scope of the HEP analysis, issues of primary concern to this Section 404(c) action are related to impacts to wetlands and other waters of the United States and associated environments. Further, EPA believes that assumptions made regarding long-term (50 year) changes in the Ware Creek watershed as well as the presumption of full and successful mitigation of project impacts may tend to obscure the proposed project's impacts by essentially dispersing those impacts both spatially and temporally. Taking into account these qualifications of the Ware Creek HEP analysis, review of the HEP analysis nevertheless offers useful projections of the watershed environment without project implementation and provides extremely useful information regarding near-term project-related impacts to wetlands and associated habitat.

The HEP analysis of the Ware Creek impoundment proposal shows that, recognizing certain trends in watershed development, over the long-term time frame with construction of the reservoir and fully successful completion of mitigation proposals basically similar to those currently offered by the project applicant, the Ware Creek watershed would experience an overall net loss of

wetland wildlife habitat. The "with project" cover-type habitat values for "target year 50" (50 years from completion of the impoundment) indicate that while the scrub-shrub wetland cover-type would experience a relatively minor net decrease, forested and herbaceous wetland cover-types would experience a substantial net decrease, approaching and exceeding fifty percent respectively. Under the no-project scenario at "target year 50," the cover-type values for forested wetlands would increase slightly, and herbaceous and scrub-shrub cover-type values would remain essentially unchanged. Review of the same long-term information for estuarine open water shows a slight decrease in that cover-type. As stated in the HEP analysis, implementation of the Ware Creek project would result in an average 30.2 percent decline in wildlife habitat values for vegetated wetlands and estuarine open water over the fifty year analysis time frame. The HEP projections also indicate that with inundation resulting from the exposed impoundment project, lacustrine open water cover-type would increase by an estimated 1298.4 percent.

In addition to forecasts of long-term habitat impacts, the HEP analysis prepared for the proposed Ware Creek project also provides near-term forecasts of impacts to wildlife habitat which would occur upon completion of the project but prior to successful implementation of mitigation plans. These data reveal that as a result of construction of the proposed dam and impoundment, vegetated wetland cover-type habitat values would decrease by approximately 60 percent in the near-term. As with the long-term loss projection, herbaceous wetlands would experience the greatest loss in habitat values and forested wetland communities would experience substantial declines. The "with project" HEP analysis also reveals that in the near-term, scrub-shrub wetland habitat values would decrease to approximately fifty percent of present baseline values. As with the long-term projections, the near-term analysis indicates that with inundation resulting from the proposed impoundment project, lacustrine open water cover-type would increase by an estimated 1298.4 percent.

In summary, the HEP analysis performed for the proposed Ware Creek water supply impoundment shows that in the near-term, there would be a serious loss in wetland wildlife habitat values. Further, the HEP projections indicate that over the long-term, wildlife values for at least two wetland habitat types would be substantially lower than baseline figures for both present environments as well as future without – project environments. Under both time frames, the HEP evaluation indicates a considerable increase in open water habitat as a result of inundation of both wetland and upland habitats.

2. Applied Analyses

The Recommended Determination and administrative record confirm that the Ware Creek watershed, including the proposed project site, supports a substantial and diverse wildlife population and provides superior habitat conditions for a variety of fish, amphibians and reptiles, birds and mammals. Appendix A of the Recommended Determination as well as other documents prepared during development of the environmental impact statement list a range of wildlife species which are either known to occur or are likely to occur in the Ware Creek area. Appendix A of the Recommended Determination identifies species of fish which have been positively identified as occurring in Ware Creek upstream of the project site and species of other wildlife which have either been seen or positively identified as existing in the affected area of Ware Creek, or are highly likely to exist in the area due to similarity of habitat requirements and known occurrence in nearby ecologically similar communities. Appendix A of the Recommended Determination has been transposed for the purposes of this document and is included in Tables 1-4.

Because of the lack of adequate and long-term field study and the restricted access to property surrounding the Ware Creek impoundment site, it may be assumed that the lists in Tables 1-4 do not fully portray the diverse wildlife community which is

likely to occur in the project area. Further, it may be assumed that the lists do not fully represent the seasonally transient and migratory populations which certainly utilize the Ware Creek project area for such necessary activities as resting and feeding.

As stated previously, Table 1 represents fish species collected upstream of the proposed Ware Creek impoundment and can therefore be assumed to include fish species which are present and which currently utilize the project site. In order to document the presence of animals other than fish in the Ware Creek project site, EPA Headquarters requested the U.S. Fish and Wildlife Service's (FWS) Gloucester, Virginia, Field Office to review the species listed in Appendix A and identify those wildlife species known to utilize the Ware Creek project site. The FWS project biologist has visited the proposed impoundment site many times and was able to provide EPA with professional expertise in identifying wildlife species listed in Appendix A which have been positively identified as occurring in the project site. Wildlife identified by the FWS project biologist as species positively known to utilize the proposed project area includes 83 wildlife species which are marked in Tables 2-4 with an asterisk.

The wildlife tables indicate the presence of numerous species which depend upon the vegetated wetland and open water habitats of the Ware Creek basin for their survival. In addition, many of the non-aquatic wildlife species identified as occurring in Ware Creek wetland communities are species which use the area non-preferentially (*i.e.*, they are not dependent on the wetland characteristics of the site *per se*) but which tend to thrive in the vegetated and relatively undisturbed Ware Creek watershed. Many of the species listed utilize various wetland habitat types as well as upland habitat.

a. Fish

Table 1 identifies 23 fish species which have been collected from stream environments upstream of the proposed Ware Creek dam site and can therefore be presumed to utilize portions of the project site. Species found on this list include important forage fish which provide a source of food for predatory fish and other wildlife. Game fish species found on the list of species found in Ware Creek include freshwater fishes such as Sunfish and Largemouth Bass as well as migratory estuarine fish species such as Spot and White Perch. As previously mentioned, the U.S. National Marine Fisheries Service (NMFS) has stated that Ware Creek is suitable for use as spawning habitat by anadromous species such as Alewife and Blueback Herring. Successful spawning however, depends upon seasonal high fresh water flow as well as adequate population levels. The administrative record indicates that use of the Ware Creek system by the species listed above was not recorded by several sampling efforts. NMFS also emphasized the importance of the Ware Creek system for use as spawning and nursery habitat for semi-anadromous White Perch. This species is considered by NMFS to be an important recreational fish species which also provides notable commercial harvest in Chesapeake Bay.

Fish species positively identified as occurring in the proposed Ware Creek project site also include the American Eel, a catadromous species which moves downstream into Chesapeake Bay waters, eventually moving out into the Atlantic Ocean. The presence of this migratory species is further evidence that the Ware Creek system can be considered available habitat for anadromous and catadromous fish species, and open to the dispersal, movement and migration of mobile aquatic species between Ware Creek and associated estuarine and oceanic aquatic environments. Also listed in Table 1 are fish species such as Spot, White Perch, Yellow Perch, Silverside, Sheepshead Minnow and Mummichog which utilize habitat throughout the entire tidal portion

of the Ware Creek system.

b. Amphibians and Reptiles

Table 2 identifies amphibian and reptile species that are either known to occur, or can reasonably be expected to occur, in wetland communities of the Ware Creek system. The table identifies species of salamanders, frogs, turtles, snakes and other reptiles and amphibians that commonly occur in and use during part of their life-cycle, areas with similar habitat characteristics (*e.g.* food sources, cover, breeding and resting sites and other physical requirements) as those found in the proposed Ware Creek project impact area. Of the 20 species listed, 16 have been positively identified as occurring in the impoundment impact area.

Table 1. Fish species collected from Ware Creek stream habitats upstream of the proposed Site V dam (Ayers et al. 1980, J.R. Reed and Associates, Inc. 1982)

Longnose gar	*Lepisosteus osseus*
American eel	*Anguilla rostrata*
Gizzard shad	*Dorosoma cepedianum*
Redfin pickerel	*Esox americanus americanus*
Golden shiner	*Notemigonus crysoleucas*
Creek chub	*Erimyzon oblongus*
White catfish	*Ictalurus carus*
Yellow bullhead	*Ictalurus natalis*
Brown bullhead	*Ictalurus nebulosus*
Pirate perch	*Aphredoderus sayanus*
Sheepshead minnow	*Cyprinodon variegatus*
Mummichog	*Fundulus heteroclitus*
Mosquitofish	*Gambusla affinis*
Tidewater silverside	*Menidia beryllina*
White perch	*Morone americana*
Bluespotted sunfish	*Enneacanthus gloriosus*
Pumpkinseed	*Lepomis gibbosus*
Orangespotted sunfish	*Lepomis humilis*

Bluegill	*Lepomis macrochirus*
Largemouth bass	*Micropterus salmoides*
Johnny darter[4]	*Etheostoma nigrum*
Yellow perch	*Perca flavescens*
Spot	*Lelostomus xanthurus*

[4] Probable misidentification. The Tessellated darter (*Etheostoma olmstedi*) is a similar species that is much more likely to be found on the Virginia coastal plain.

Table 2. Amphibians and reptiles that occur (*), or are likely to occur, in the wetland communities of Ware Creek (USFWS 1989, VDGIF 1989, Schwab 1988).

Red-spotted newt*	*Ntophthalmus viridescens viridescens*
Spotted salamander	*Abystoma maculatum*
Fowler's toad*	*Bufo woodhousel fowleri*
Northern cricket frog*	*Acris crepitans*
Gray treefrog*	*Hyla crysoscelis*
Green treefrog*	*Hyla cinerea*
Spring peeper*	*Hyla crucifer*
Eastern spadefoot toad	*Scaphiopus holbrooki holbrooki*
Bullfrog*	*Rana catesbelana*
Green frog*	*Rana clamitans melanota*
Pickerel frog*	*Rana palustris*
Southern leopard frog*	*Rana sphenocephala*
Eastern painted turtle*	*Chrysemys picta picta*
Redbelly turtle*	*Pseudemys rubriventris*
Eastern box turtle*	*Terrapene carolina carolina*
Five-lined skink*	*Eumeces fasclatus*
Broad-headed skink	*Eumeces laticeps*
Eastern worm snake	*Carphophis amoenus amoenus*
Rough greensnake*	*Opheodrys aestivus*
Black rat snake*	*Elaphe obsoleta obsoleta*

* = observed by USFWS.

c. Birds

Table 3 lists bird species that are either positively known to occur, or can be reasonably expected to occur, in wetlands communities of the Ware Creek system. The table identifies 108 species of ducks, herons, hawks, owls, woodpeckers, flycatchers and other birds that commonly occur in and use during part of their life-cycle, areas with similar habitat characteristics (*e.g.* food sources, cover, nesting and resting sites and other physical requirements) as those found in the proposed project impact area. Of the 108 species listed in Table 3, 59 have been positively identified as utilizing wetland communities in the Ware Creek project area.

The variety of the observed bird species listed in Table 3 which preferentially utilize wetland areas, including the Wood Duck, Red-shouldered Hawk, American Woodcock, Barred Owl and Northern Parula Warbler, reflect the diverse wildlife habitat characteristics available in the Ware Creek wetlands. The administrative record indicates that the Ware Creek area supports substantial populations of Wood Duck, Mallard and Black Duck, the latter being a species with special breeding and nesting habitat requirements which are met in the Ware Creek system. In addition the Ware Creek wetlands, particularly the tidal freshwater communities present in the basin, support a diversity of plants which serve as food for these waterfowl species. Wetlands characteristic of Ware Creek offer a source of high energy foods during migratory seasons when waterfowl can best utilize them either prior to northward migration in the spring or following southward migration in autumn.

The presence of other bird species, which do not preferentially utilize wetlands but which have been identified as utilizing Ware Creek wetland habitat, including various woodpeckers, Red-tailed Hawk, and Wild Turkey, serves to confirm the complex wildlife habitat support aspects of the Ware Creek wetland communities. While these species do not depend upon wetland habitat for critical portions of their life-cycle, they tend to prosper under the current

habitat characteristics of the Ware Creek wetland system.

The administrative record and Corps Final EIS for the Ware Creek project indicate that the wetland system in the Creek may be or is utilized by three bird species of special significance. The EIS states that while the species is not known to nest in the area at present, there are anecdotal references to sightings of Southern Bald Eagles in the Ware Creek area. This species prefers open water environments and is likely to limit its activities to those portions of the watershed which provide adequate suitable habitat. In addition, the wetlands of France Swamp support a rookery site for the Great Blue Heron. The Great Blue Heron is a colonial waterbird species which returns to the same area each year and congregates in the Swamp's wooded wetland areas for mating, breeding and nesting. According to the 1987 Final EIS, the France Swamp Great Blue Heron rookery supported 81 nests, an increase from the 35 to 40 nests described in documents prepared for the project applicants in 1982. The rookery is one of several in the same physiographic region as Ware Creek, although correspondence from the FWS indicates that the rookery may be larger than average for the region. FWS notes that the Great Blue Heron displays a low tolerance for human disturbance and to the extent that relocation of the France Swamp Heron population occurs after severe disturbance or destruction of the rookery, that reestablishment would place stress on this and other affected populations. Finally, as stated above, the Ware Creek area is known to support an important population of Black Duck. This waterfowl species is of particular concern to regional waterfowl management policies because of significant and critical population declines since the mid-1950s. At present, the majority of concern for this species centers on loss of the species' wintering habitat. As such, severe restrictions have been placed on the hunting of Black Duck and the North American Waterfowl Management Plan has set a goal of protecting and enhancing migration and wintering habitat for Black Ducks. Along with the Great Blue Heron, the Black Duck is identified by the Chesapeake Bay Program's

Table 3. Birds that occur (*), or are likely to occur, in the wetland communities of Ware Creek (USFWS 1989, VDGIF 1989, Rhodes 1988, USFWS 1983)[5]

Pied-billed grebe*
Great blue heron*
Great egret*
Green-backed heron*
Wood duck*
Green-winged teal*
American black duck*
Mallard*
Northern pintail*
Blue-winged teal*
Northern shoveler*
Gadwall*
American widgeon*
Canvasback
Redhead
Ring-necked duck*
Lesser scaup
Common goldeneye
Bufflehead*
Hooded merganser
Ruddy duck*
Osprey
Bald eagle*
Sharp-shinned hawk
Cooper's hawk
Red-shouldered hawk*
Red-tailed hawk*
Wild turkey
Sora
American coot*
Killdeer
Greater yellowlegs
Solitary sandpiper
Spotted sandpiper
Least sandpiper
Common snipe
American woodcock*
Black-billed cuckoo
Yellow-billed cuckoo
Eastern screech-owl
Great horned owl
Barred owl
Ruby-throated hummingbird
Belted knigfisher*
Red-headed woodpecker*
Red-bellied woodpecker*
Downy woodpecker*
Hairy woodpecker*
Northern flicker*
Pileated woodpecker*
Eastern wood-pewee*
Acadian flycatcher*
Eastern phoebe
Great crested flycatcher*
Eastern kingbird*
Purple martin

* = observed by USFWS.

[5] Common names derived from the "Thirty-forth Supplement to the American Orinthologists' Union Creek list of North American Birds," Supplement to the Auk, Vol. 99(3), July 1982. Scientific names are not included because accepted common names accurately identify species in this taxonomic group.

Table 3. (Cont)

Tree swallow*
Blue jay*
American crow*
Fish crow*
Carolina chickadee*
Tufted titmouse*
Red-breasted nuthatch
Brown creeper
Carolina wren*
House wren
Winter wren*
Marsh wren*
Golden-crowned kinglet
Ruby-crowned kinglet
Blue-gray gnatcatcher*
American robin*
Gray catbird*
Northern mockingbird
Brown thrasher
European starling
Red-eyed vireo
Northern parula warbler*
Chestnut-sided warbler
Cape May warbler
Black-throated blue warbler
Yellow-rumped warbler*
Yellow warbler*
Black-throated green warbler
Yello-throated warbler*
Palm warbler
Blackpoll warbler
Cerulean warbler
Black-and-white warbler
American redstart*
Prothonotary warbler
Northern waterthrush
Louisiana waterthrush*
Kentucky warbler*
Common yellowthroat*
Hooded warbler
Northern cardinal
Indigo bunting*
Rufous-sided towhee*
Song sparrow*
Swamp sparrow*
White-throated sparrow*
Dark-eyed junco*
Bobolink
Red-winged blackbird*
Rusty blackbird
Common grackle*
American goldfinch

* = observed by USFWS.

Living Resources Task Force as a target species for the development of habitat requirements based upon "...recreational, aesthetic, or ecological significance and the threat to sustained production due to population decline or serious habitat degradation."

d. Mammals

Table 4 identifies mammal species that are either positively known to occur, or can be reasonably expected to occur, in wetlands communities of the Ware Creek system. The table identifies 22 species of deer, squirrel, mouse, and other mammals that commonly occur in and use during part of their life-cycle, areas with similar habitat characteristics (*e.g.*, food sources, cover, denning and resting sites and other physical requirements) as those found in the proposed project impact area. Of the 22 species listed, seven species have been positively identified as utilizing wetland communities in the Ware Creek project area. Several of the species listed in Table 4, including the Muskrat, Beaver, and River Otter, are species which are commonly found only in wetland areas and which tend to thrive in vegetated wetland systems which offer adequate cover and material for food and denning requirements. Many of the other mammal species listed which are not obliged to utilize the aquatic wetland environment nevertheless take advantage of the abundant food and habitat resources available in the Ware Creek wetland communities and thus flourish as a result of the communities' habitat characteristics.

Included in Table 4 are several species which are important game species, particularly Whitetail Deer, and the administrative record indicates that hunters successfully harvest these species. Table 4 also lists numerous small mammal species, such as the Meadow Vole and White Footed Mouse, which are considered an important food source for raptors and larger predatory mammals such as Gray Fox. Finally, the list of mammal species which are known to or are likely to currently utilize Ware Creek wetland communities includes fur-bearing mammals such as Mink, Beaver, River Otter and Muskrat.

Table 4. Mammals that occur(*), or are likely to occur, in the wetland communities of Ware Creek (USFWS 1989, VDGIF 1989, Jackson et al. 1976).

Virginia opposum	*Didelphis viginiana*
Least shrew	*Cryptotis parva*
Southern shrew	*Sores loagirostris*
Hoary bat	*Lasiurus cinereu*
Big brown bat	*Eptesicus fuscus*
Seminole bat	*Lasiurus seminolus*
Northern yellow bat	*Lasiurus intermedius*
Little-brown myotis	*Myotis lucifugus lucifugus*
Gray fox*	*Urocyon cinereoargenteus*
Raccoon*	*Procyon lotor*
Long-tailed weasel	*Mustela frenata*
Mink	*Mustela vison*
River otter*	*Lutra canadensis*
White-tailed deer*	*Odocoileus virginianus*
Gray squirrel*	*Sciurus carolinensis*
Beaver*	*Castor canadensis*
Marsh rice rat	*Oryzomys palustris*
White-footed mouse	*Peromyscus leucopus*
Meadow vole	*Microtus pennsylvanicus*
Dark meadow vole	*Microtus pennsylvanicus nigrans*
Meadow jumping mouse	*Zapus hudsonius*
Muskrat*	*Odatra zibethica*

* = observed by USFWS.

IV. ADVERSE IMPACTS OF PROPOSED PROJECT

This Final Determination concerns waters of the United States affected by the proposed impoundment known as the Ware Creek/James City County water supply reservoir. Review of the Recommended Determination and the administrative record pertaining to this case confirms that Region III's Recommended Determination accurately reflects adverse environmental impacts of the proposed project. Section VI of the Recommended Determination, ADVERSE ENVIRONMENTAL IMPACTS (pages 18-41), is hereby adopted, except to the extent indicated below, as part of this Final Determination. As related above, an extensive examination of project-related impacts to wildlife habitat characteristics is provided in the Habitat Evaluation Procedures found in Appendix A of the Corps Final EIS for the Ware Creek project. Below is a summary, based on the administrative record and the Recommended Determination, of the adverse environmental impacts which would result with implementation of the proposed project.

Changes to the Recommended Determination (in addition to those described on page 13 above):

The figures for estimated annual primary production in Table 5 of the Recommended Determination and any other references in the text of the Recommended Determination or its Appendices to annual primary production were calculated improperly. Those figures and any other figures derived from the use of Table 4 in the Recommended Determination should be multiplied by the number 0.4047 to correct for this error. This change does not alter relative percent-loss figures presented in the Recommended Determination.

The figure for potential decrease in detrital export on page 28 of the Recommended Determination is not adopted in this Final Determination.

Environmental effects of implementation of the proposed dam and impoundment project would include:

- the removal or destruction of vegetation at or near the project dam site and in the impoundment area below +28 feet mean sea level and the removal of a majority of the organic material from the impoundment area;

- the creation of a physical barrier to the naturally occurring passive movement and active migration of fish and other aquatic wildlife;

- the creation of a physical barrier to the influence of brackish and fresh tidal waters above the proposed dam site;

- the profound alteration of the physical and chemical hydrology of the current Ware Creek system including total water discharge volume, discharge timing, Creek water quality, and seasonal discharge of the current freshwater system;

- and, the loss of the area as a basin-exchange site for nutrients which eventually enter downstream estuarine systems of the York River and Chesapeake Bay.

These physical alterations of the present Ware Creek landscapes would result in direct, secondary and cumulative impacts to natural environmental resources and values in the immediate area of the impoundment as well as areas removed from but associated with the project site.

A. IMPACTS TO WILDLIFE

Initial project construction would require the removal or destruction of vegetation at or near the project dam site and in the impoundment area below +28 feet mean sea level and thus the near total loss of unique and valuable vegetated upland and

wetland systems in the impoundment area. Clearing activities necessary for reservoir construction would further involve the removal of a majority of the organic material from the proposed reservoir pool. This clearing would result in the direct removal and loss of 425 acres of functional wetland and open water habitat and 792 acres of adjacent forested upland habitat and would have a substantial direct impact on wildlife. Of the aquatic habitat directly lost as a result of the project, 381 acres are vegetated wetlands and the remaining 44 acres are either palustrine, estuarine or lacustrine open water systems. Of the vegetated wetlands which would be lost as a result of clearing activities, the majority are herbaceous wetlands (47%) and forested wetlands (40%), with scrub-shrub wetlands (13%) accounting for the remaining acreage. The vegetated wetlands which would be destroyed by the project represent over 38 percent of the total wetland acreage of the watershed and over 67 percent, approximately 55 percent and over 28 percent of the scrub-shrub, forested, and herbaceous wetlands respectively. The impoundment would result in the inundation and destruction of areas considered as Resource Category 1 by the U.S. Fish and Wildlife Service and as such would destroy wildlife habitat considered to be unique and irreplaceable on a regional basis.

During land clearing activities preceding dam construction, wildlife such as small mammals, reptiles, amphibians, and invertebrates which could not readily escape the impoundment project site would perish. Because of limited mobility, many individuals of these species would be destroyed by land clearing machinery or would die as a result of the loss of suitable hiding or resting cover and source of food. In addition, certain aquatic wildlife, including fish species, would be adversely impacted by initial land clearing activities due to the near-term loss of necessary aquatic life support systems. More mobile terrestrial wildlife and birds, as well as wildlife characteristic of wetland communities, would be forced to migrate out of the impoundment site in search of suitable habitat. The Corps Final EIS, however, indicates that

there is limited suitable habitat in the Ware Creek basin available for immigration of wildlife which would be displaced by the proposed project and that migrating individuals would not find adequate habitat or would displace other individuals. This lack of available habitat would result in the further direct mortality of affected wildlife over the near-term.

The administrative record sustains the conclusion that the Ware Creek wetland systems currently support significant and diverse wildlife habitat values and that a broad range of wildlife currently utilize the Ware Creek impoundment site wetland communities. The area exhibits significant habitat characteristics (*e.g.*, food sources, cover, nesting and resting sites and other physical requirements) which are vital to both resident wildlife population and species which utilize the area for different stages in their life-cycle. Further, wetlands of the Ware Creek impoundment project area support wildlife species which preferentially depend upon the wetlands for their habitat requirements as well as wildlife species which do not require that habitat type but which tend to benefit from the wetland attributes. As stated previously, implementation of the Ware Creek water supply project would destroy a significant acreage of wetlands and would adversely impact associated wildlife values. The magnitude of this impact is recognized and summarized in the HEP analysis previously cited which concludes that construction of the proposed dam and impoundment would reduce vegetated wetland cover-type habitat values by approximately 60 percent in the near-term with herbaceous wetlands experiencing the greatest loss in habitat values and forested wetland communities experiencing substantial declines. The "with project" HEP analysis also reveals that in the near-term, scrub-shrub wetland habitat values would decrease to approximately 50 percent of present baseline values.

In addition to adverse impacts associated with obstructing the present aquatic system, planned municipal water supply withdrawal would reduce average freshwater stream flow from Ware

Creek immediately downstream from the dam site from 12.4 mgd to 3.3 mgd. This change would alter both the downstream vegetated wetland communities and the nutrient transport mechanisms present in the Ware Creek system and would have serious adverse effects on associated ecological communities.

While it is difficult to quantify the exact impact of the impoundment and water supply withdrawal on the Ware Creek system's nutrient flux and export of dissolved organic and detrital material, it is evident that construction of the Ware Creek impoundment would severely and adversely alter the current nutrient regime. Placement of the dam structure would impede or prevent the downstream export of a substantial percentage of the amount of particulate organic material currently passing through the creek system into the York River. Water removed from the water supply reservoir as part of the operation of that facility would further limit the downstream export of dissolved and particulate organic material and freshwater discharge into the York River. The administrative record shows that under normal nutrient loading conditions, nutrients exported into estuarine systems, such as the York River, by freshwater discharge, such as Ware Creek, support both detritus-based and plankton-algae based estuarine food webs. The proposed dam and reservoir project would directly result in decreased nutrient input into the York River estuarine system. The present Ware Creek detrital/ nutrient export mechanism contributes to the estuarine food web of the York River and can reasonably be considered to augment the estuarine environment of the Chesapeake Bay.

In addition to adverse impacts to nutrient transport, implementation of the proposed project and operation of the water supply aspects of the reservoir would substantially alter the vegetation communities downstream of the dam. As noted in the administrative record, changes in the physical and chemical hydrologic regimes downstream of the dam would result in a conversion from diverse structurally complex vegetated communi-

ties to less diverse plant communities. Further, implementation and operation of the project would essentially eliminate tidal freshwater wetlands from the Creek system and would thereby eradicate plant species which are known to provide critical support functions to important wildlife species and which contribute readily decomposed and more palatable detrital material to the associated food chain.

1. Fish

Construction of the dam and impoundment project would substantially alter the overall hydrologic regime of the Ware Creek aquatic system by replacing the current vegetated flowing stream system with a lake system. This change would in turn result in a major modification of the wildlife habitat characteristics of Ware Creek. The Corps Final EIS concludes that some stream species of fish could eventually be eliminated from the Creek due to this change in flow regime. From a habitat perspective, recognizing the incised topography of the Ware Creek basin and reservoir pool, the extent of aquatic areas supporting vegetated shallows necessary for fish habitat would be limited primarily to the upper regions of the impoundment. This decline and change in vegetated aquatic areas which currently serve as spawning, nursery and cover habitat would adversely impact fish species which use those habitats. In addition, the administrative record suggests that the Virginia Department of Game and Inland Fisheries would augment natural fish populations with supplementary stocking of forage and game fish species. It is reasonable to expect that a managed recreational game fishery would substantially alter the abundance and diversity of current natural fish populations and modify the species composition to foster a less diverse population more typically adapted to relatively static lake environments.

In addition to direct project impacts to fish species utilizing aquatic habitat in the impoundment site, placement of the dam

structure would adversely affect the movement of fish species in the Ware Creek system. Construction of the reservoir dam would essentially close the aquatic pathway currently available for the natural passage and migration of fish species. The adverse implication of this project-induced change on highly mobile fish species is reinforced by evidence that the present open system provides access for the semi-anadromous[6] White Perch which is considered a trophic link between the upper Ware Creek watershed and associated estuarine systems and which is also considered and important commercial and recreational fish species by the National Marine Fisheries Service (NMFS). In addition to adverse impacts to a known semi-anadromous species, truncation of the current Ware Creek system would eliminate the availability of suitable spawning habitat for anadromous alosids (*i.e.*, Alewife and Blueback Herring) in the system and would limit future use of the system by the catadromous American Eel.

Adverse impacts to fish species are not limited to physical effects to resident and migratory species utilizing the proposed project area. As noted previously, the Ware Creek dam would isolate a significant majority of the Ware Creek watershed from the York River and would result in the uncoupling of the current aquatic continuum between the freshwater stream and the York estuarine system. NMFS has concluded that as a result of implementation of the project, Ware Creek would cease to be a subestuary of the York River stating, "[a]bove the dam Ware Creek will become a freshwater lake having limited ecological interaction with the York; below the dam, Ware Creek will be no more than a lagoon or cove of the York." Implementation of the project would severely limit the ecological link between Ware Creek and the York River.

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[6] Semi-anadromous is defined by the National Marine Fisheries Service as a fish species which spawns in fresh waters but lives most of its life in estuarine waters.

2. Amphibians and Reptiles

As stated above, implementation of the proposed Ware Creek impoundment would require the removal of a significant portion of the vegetated wetland communities in the basin and would result in the inundation of those areas. The destruction of the unusually diverse vegetated wetland systems present in the project site and their replacement with an open water lake system would substantially reduce the available habitat for reptile species and would have a particularly detrimental impact on habitat utilized by amphibian species.

Clearing of vegetation and removal of organic material from the impoundment area would eliminate a substantial portion of currently available resting, escape and cover habitat for a broad range of reptiles and amphibians likely or known to occur in the Ware Creek project site. Moreover, removal of the vegetation and alteration of the Creek hydrologic regime would substantially alter the breeding habitat for both reptile and amphibian wildlife species. By the very nature of amphibian biological requirements for both terrestrial and aquatic environments these species would be adversely impacted by the project. The area's diverse vegetated wetland environment combined with the variable hydrology characteristic of the Ware Creek system provides abundant suitable safe breeding and nursery habitat for amphibian species. Conversely, the relatively deep, expansive open water habitat and relatively abrupt edge which would be created by the proposed impoundment would offer only limited available habitat for amphibian species. As with fish species, the proposed impoundment would provide limited vegetated edge for amphibian habitat except in the upper portions of the impoundment. Furthermore, because the impoundment would be managed for recreational fisheries, predatory fish stocked in the impoundment would decrease the suitability of the proposed impoundment as habitat for amphibian species. In summary, removal of vegetated communities from the impoundment area and inundation of the reservoir

would substantially decrease the overall available habitat for both reptile and amphibian species and would be particularly disruptive to the breeding habitat requirements of amphibians. The adverse impacts of the proposed project would reduce both the number of individuals utilizing the area and the diversity of amphibian and reptile species which could successfully exploit the habitat of the altered environment.

3. Birds

Implementation of the proposed impoundment project would have a profound impact on the broad range of bird species which currently utilize the Ware Creek area including the proposed reservoir site. While the proposed open water reservoir with its mitigation islands would provide feeding, nesting and resting habitat for primarily waterfowl species and fish-eating raptors, implementation of the project would severely reduce available territory for other types of birds which currently thrive in the vegetated wetland and upland habitat as well as species which preferentially use the present vegetated wetland habitat. Clearing of the overstory trees from forested upland and wetland areas and removal of scrub-shrub wetlands from the impoundment site would destroy a majority of the diverse structural environment which is utilized by resident and migratory bird species for foraging, breeding, nesting, escape and cover habitat. In addition, removal of understory plant species from the project site would substantially reduce shrubs and vines which supply seeds, berries and soft mast and which provides a varied source of food for bird species. Removal of the herbaceous wetlands in the proposed project site would further impact habitat values of the area by eliminating cover and foraging habitat currently utilized by resident and migratory bird species. Overall, the proposed project would result in a considerable reduction of habitat for a robust variety of bird species and would offer habitat for a limited number of specialized bird species.

As noted in the previous section, the Ware Creek area supports a significant population of Great Blue Heron which returns to the same area in France Swamp each year. The Herons congregate in the Swamp's wooded wetland acres for mating, breeding and nesting. Due to disturbance and removal of vegetation and flooding of nesting trees, implementation of the Ware Creek project would destroy the Heron rookery currently existing in the project site. The Corps Final EIS concurs with the finding that the rookery would be lost and concludes that prospects for resettlement of the colony within the Ware Creek watershed would be highly uncertain. Destruction of the rookery would force the colony to search for an alternative site for mating, breeding and nesting and may place undue strain on other Heron colonies in the Peninsula region as the Ware Creek population invades other rookeries in search of suitable habitat. While EPA recognizes the project applicant's mitigation proposals for loss of the Ware Creek Heron rookery, the administrative record suggests that the unique and poorly understood nature of the Great Blue Heron's habitat requirements make the likelihood of truly successful mitigation extremely uncertain. EPA believes that given the present state of knowledge about the habitat requirements of the Great Blue Heron, it cannot now be stated with any assurance that the loss of the Great Blue Heron rookery to the Ware Creek project can be mitigated.

In addition to adverse impacts associated with destruction of habitat, implementation of the project and alteration of the present Ware Creek hydrologic regime would have a substantial influence on vegetation downstream of the impoundment. As demonstrated in the results of research conducted by the Virginia Institute of Marine Science, the proposed project would substantially change the salinity of aquatic environments in the middle and lower portions of Ware Creek. As a result of project-induced reductions in freshwater flow and obstruction of the stream channel by the dam, vegetation downstream of the dam would over time convert to vegetation characteristic of brackish tidal estua-

rine environments. This change would have two impacts on the current Ware Creek environment downstream from the proposed dam. First, the change in creek hydrology and the resulting modification of salinity distribution would result in a profound reduction in the availability of food for various resident and migratory bird species. Bird species which currently utilize the seeds, berries, roots, and tender shoots of the diverse plant species found in tidal freshwater and oligohaline portions of Ware Creek for foraging and feeding would be adversely impacted as vegetation shifts to less diverse and less palatable monotypic plant populations characteristic of the mesohaline reaches of the Creek. Second, modification of the salinity distribution in the middle and lower Ware Creek environment would reduce the structural diversity of the plant species present. According to a report prepared by the Virginia Institute of Marine Sciences, tree and shrub species such as Red Maple, June Berry and Buttonbush, would be lost as a result of the modifications to salinity caused by decreased freshwater input into the Creek system. The affected portions of the stream would become populated by structurally less complex herbaceous species. As a result of this change, resident and migratory bird species which currently utilize the diverse tree and shrub habitat for cover, nesting and resting habitat, would be adversely impacted by the proposed water supply withdrawal.

As stated above, the change in plant diversity which would accompany implementation of proposed water withdrawal strategies would have a grave adverse impact on bird species which preferentially utilize the impacted environments for foraging. One species representative of this population and of particular concern to present waterfowl management policies is the Black Duck. Black Duck populations have been declining steadily since the mid-1950s and there is concern over loss of the species' wintering habitat. As such, the North American Waterfowl Management Plan (Plan) has set a goal of protecting and enhancing migration and wintering habitat for Black Ducks by "protecting

50,000 additional acres of migration and wintering habitat on the east coast of the United States." The Plan is an agreement between the United States and Canada which provides a broad framework for the conservation and management of populations of ducks, geese and swans that occur in North America. The proposed impoundment project and associated adverse environmental impacts would be contrary to the goal of the Plan.

As noted previously, the Black Duck is known to utilize the proposed Ware Creek project site and the area is currently considered by the U.S. Fish and Wildlife Service to be good quality habitat for dabbling ducks such as the Black Duck. While Black Ducks are known to consume a variety of natural foods including fruits, nuts, berries, seeds, aquatic plants, and invertebrate animals, they are less likely than similar species such as Mallards to utilize residual grains remaining in farm fields. The predicted project-induced changes in vegetation would result in the replacement of current plant species with marsh grass communities and would force the Black Duck and other similar foraging waterfowl species to search for food elsewhere, thereby increasing habitat stress on a representative waterfowl species which is currently experiencing population declines due to habitat loss.

4. Mammals

Clearing of the vegetation from the Ware Creek project site would destroy a significant acreage of upland and vegetated wetland habitat currently used by terrestrial and aquatic mammal species. While removal of the forested areas would reduce cover and denning habitat for arboreal species, such as the Gray Squirrel and Raccoon, reservoir site preparation and inundation of the impoundment would eliminate resting, cover and feeding habitat used by terrestrial mammals, such as Whitetail Deer. In addition, because of the topography of the area to be flooded by the water supply impoundment, the proposed project would reduce the available habitat for aquatic mammals such as Beaver and

River Otter, which currently utilize vegetated wetlands in the Creek system. As previously noted, the administrative record indicates that wildlife habitat present in the Ware Creek watershed is likely to be unavailable for immigration of species displaced by the proposed project. This factor could preclude "absorption" of mammal populations which would be displaced by the proposed impoundment by the remaining wildlife habitat in the Ware Creek basin.

In addition to impacts to wildlife which would occur as a result of the clearing and inundation of the project site, operation of the water supply aspects of the proposed project would also impact mammal species which utilize the freshwater tidal and oligohaline areas downstream of the proposed dam site. Changes in vegetation which would accompany modification of the Creek's salinity distribution would reduce the availability of suitable cover and foraging habitat for mammal species.

Placement of the dam and impoundment would effectively block a portion of Ware Creek and its tributaries to use by various migratory wildlife species. While the forested nature of the watershed would allow wildlife to avoid the impacted area, wildlife species which are migratory or highly mobile and which depend on the present wetland/acquatic corridor for their movement would be adversely impacted by the proposed impoundment.

B. IMPACTS TO RECREATIONAL AND COMMERCIAL FISHERIES

Impacts to the life history and habitat requirements of fish species are described in the previous section on impacts to wildlife. In addition to those impacts, EPA believes it is important to recognize potential impacts to the substantial benefits the present Ware Creek system provides to recreational and commercial fisheries. As previously noted the Ware Creek system currently supports a viable population of semi-anadromous White Perch,

a species which the National Marine Fisheries Service considers important to both recreational and commercial fisheries. Also, the system unquestionably provides spawning and nursery habitat for other fish species sought by recreational and commercial fishermen as well as providing important habitat for a range of forage fish which serve as prey for larger game and commercial species. While the magnitude of the impact is difficult to predict, inundation of the proposed reservoir site and alteration of the vegetated communities downstream of the dam site would certainly reduce the ability of the Ware Creek system to support fish species and would influence the availability of game and commercial species in associated aquatic systems.

C. IMPACTS TO RECREATION

The administrative record does not indicate that significant recreational fishing exists in the Ware Creek basin except for limited ventures in the area of Richardson's Millpond. The majority of the stream area is currently posted and therefore has restricted public access. EPA recognizes that the proposed impoundment would likely provide greater opportunity for certain types of fishing by creating a 1200-acre lake with public access. As stated previously, implementation of the impoundment project would increase lacustrine open water habitat by a substantial 1298 percent. The project would thus result in a large increase in freshwater lake habitat. The administrative record, however, is unclear with regard to the quality of this habitat for recreational fishing opportunities. The Corps Final EIS states that recreational fishing is usually good in the early years of a reservoir, but may decline as nutrients are used up and the fish populations stabilize. Further, it is reasonable to assume that drawdown of the reservoir which would be required on a periodic basis due to variable rainfall and the resulting mudflat "bathtub ring" might limit the desirability of the impoundment for recreational fishing.

As noted in previous sections, the Ware Creek system sup-

ports abundant bird and mammal species which are sought by hunters. The Ware Creek area, including the proposed impoundment site, contains duck hunting blinds and is known to be utilized by hunting clubs during the deer season. Previous sections of this Final Determination explain how populations of terrestrial mammals as well as game bird species would be adversely affected by the direct and secondary impacts of the proposed impoundment. Indeed, even if game species were to continue to prosper in the vicinity of the proposed impoundment, it is reasonable to assume that there would be certain restrictions on the use of firearms on and near the impoundment. Nevertheless, the administrative record does not contain substantial information on impacts to hunting and predictions of the extent of adverse impacts on the recreational aspects of hunting supported by the present Ware Creek system would be speculative.

D. CUMULATIVE IMPACTS

Implementation of the Ware Creek water supply project would result in serious direct environmental impacts including the elimination of a substantial portion of the vegetated wetland acreage in Ware Creek basin and alteration of the freshwater and organic energy export from Ware Creek. Recognizing the extent of those impacts, the relatively large scope of the Ware Creek proposal and the proposal's potential adverse environmental impacts on associated aquatic systems, cumulative effects of the project must also be considered in EPA's Section 404(c) deliberations.

As proposed, the Ware Creek project would directly eliminate over 38 percent of the vegetated wetland communities in the Ware Creek watershed. Acreage figures provided in the Corps Final EIS indicate that while the proposed project would eliminate over 28 percent of the present herbaceous wetlands, approximately 55 percent of the present forested wetlands and over 67 percent of the present scrub-shrub wetlands would be lost in

the watershed in the near-term. Allowing for fully successful completion of the proposed compensatory mitigation offered by the project applicant (which is uncertain and overstated, for reasons discussed below in Section V of this determination), the administrative record indicates that only scrub-shrub wetlands would approach replacement by the mitigation; forested and herbaceous wetlands would continue to experience a substantial shortfall in habitat values from the present due to adverse impacts from the proposed project. Moreover, as stated previously, the proposed dam would modify wetland communities downstream of the dam.

While the loss of over 38 percent of the vegetated wetland communities over the near-term, and the elimination and/or alteration of a sizable segment of the wetland communities in the Ware Creek basin over the long-term, would represent a substantial impact to the watershed, these losses would also contribute to the loss of wetlands in the York River watershed and the Chesapeake Bay. Information collected by EPA consultants, Gannet Fleming, during EPA Region III's review of the proposed project indicates that the lower York River watershed currently supports approximately 4100 acres of vegetated inland wetlands and that these wetlands comprise 2.26 percent of the watershed area. The research also indicates that, in addition to directly eliminating associated wetland systems through clearing and inundation, impoundment of other creek systems in the lower York River basin has uncoupled approximately one-fourth of the inland vegetated wetland systems from the lower York River estuary. Although the relative severity of effects would be of a different scale, the proposed Ware Creek project would result in similar types of impacts to the environment through impacts from inundation and obstruction of the Creek and would exacerbate adverse impacts which have already taken place in the lower York River basin.

The proposed Ware Creek project would also contribute to

cumulative adverse environmental impacts experienced by the Chesapeake Bay. Historically, along with other wetlands in the mid-Atlantic region, Chesapeake Bay wetlands have experienced a major decline in acreage. Statistics indicate that from the mid-1950s until the late 1970s, the Bay watershed experienced wetland losses averaging over 2,800 acres annually with the majority of the decline taking place in estuarine vegetated and palustrine forested wetlands. Statistics for the same period also indicate a considerable net gain in freshwater ponds. EPA recognizes that wetland losses in the Bay watershed have come about as a result of many factors, many of which are beyond the scope of Section 404 of the Clean Water Act. Nevertheless, research by the Fish and Wildlife Service notes that in addition to other human-induced causes, "[c]reation of freshwater impoundments was another important factor," contributing to wetlands loss in the Chesapeake Bay watershed with pond, lake, and reservoir construction accounting for approximately 30 percent of the losses. In Virginia, pond, lake, and reservoir construction was responsible for approximately 25 percent of the loss of palustrine vegetated wetlands with roughly 80 percent of those losses occurring in the Lower Coastal Plain region, including the James City County area.

EPA believes that the wetlands which are directly associated with the Bay environment, such as those in the lower York River, represent important natural resources which are necessary for maintenance and protection of valuable Bay environments. Further, EPA concurs with the findings of the Fish and Wildlife Service study of wetland trends in the five mid-Atlantic states including the Chesapeake Bay region, where they noted:

> We can easily see that huge gains in freshwater ponds and substantial losses of vegetated wetlands have recently taken place in the region. The importance of the gain in pond acreage to fish and wildlife species has not been assessed and is still subject to much discussion. By contrast, the losses of

vegetated wetlands (*e.g.*, emergent, scrub-shrub, and forested wetlands) represent known losses of many other environmental quality and socio-economic values provided free-of-charge to society by wetlands. Moreover, the significance of the vegetated wetlands losses is not simply reflected by the acreage lost alone, since prior to the mid-1950s, many wetlands had already been destroyed, making the remaining wetlands more important and future losses more serious.

The incremental loss of functional wetland systems which currently contribute to the environmental well-being of the York River and the Chesapeake Bay and which help maintain and protect the environmental integrity of those systems represents a profound cumulative loss.

E. CHESAPEAKE BAY AGREEMENTS

As noted previously, the Ware Creek impoundment project would contribute to the adverse effects of cumulative environmental impacts in the Chesapeake Bay watershed. EPA's determination regarding the Ware Creek project is supported by commitments made by the Federal government and the Commonwealth of Virginia towards protecting and enhancing Bay environments.

In the 1987 Chesapeake Bay Agreement, the Federal government and states surrounding the Bay, including Virginia, recognize the importance of the Chesapeake Bay's resources and committed to managing those resources to halt and reverse serious declines in the quality and productivity of the Bay. Goals of the 1987 agreement which are relevant to EPA's decision include clear provisions for the restoration and protection of the Chesapeake Bay's living resources, their habitats and ecological relationships. The stated intent of this goal is in part to: "protect, enhance and restore wetlands... important to water quality and habitat; maintain freshwater flow regimes necessary to sustain

estuarine habitats; and restore, enhance and protect waterfowl and wildlife." Compliance with and achievement of each of these management objectives relates directly to the proposed Ware Creek project and EPA's Section 404(c) action.

On January 5, 1989, in fulfillment of a "living resources" commitment of the 1987 agreement, the Chesapeake Executive Council, of which EPA and the Commonwealth of Virginia are members, adopted the Chesapeake Bay Wetlands Policy (Policy). As stated in the adoption statement, the Policy establishes an immediate goal of no net loss of wetlands with a long-term goal of a "net resource gain." The Policy preamble continues, stating:

> Wetlands are of importance to the protection and maintenance of living resources associated with the Chesapeake Bay ecosystem as they provide essential breeding, spawning, nesting and wintering habitats for a major portion of the region's fish and wildlife, including migratory birds, endangered species and commercially and recreational important wildlife.

The Policy asserts that in order to protect existing wetlands and achieve a net resource gain in wetland acreage and function, the signatories must protect existing functioning wetlands. Further, the Policy declares that the underlying principle behind protection of the Bay wetlands is protection from "direct, indirect or cumulative impacts which result in losses of wetland acreage or function." The Policy establishes that the signatories will use existing procedures including regulation and protection standards to limit adverse impacts to wetlands and that "[o]nly in rare instances will losses of wetland acreage or function be allowed or considered justifiable."

Based upon declarations of protection strategy and management commitments made in the 1987 Chesapeake Bay Agreement and the 1989 Chesapeake Bay Wetlands Policy, EPA and

the Commonwealth of Virginia have adopted principles and committed themselves to policies and actions which have as their goal the protection, restoration and enhancement of wetland communities associated with the Chesapeake Bay. As noted earlier, the proposed project, including proposed mitigation, would result in the short-and long-term loss of valuable wetland communities which currently support diverse wildlife habitat. Further, operation of the proposed project would diminish the flow of freshwater from the Ware Creek watershed into the York River estuary and Chesapeake Bay and would alter habitat which currently supports regionally important waterfowl, such as the Black Duck, and other wildlife. EPA believes that this Final Determination is consistent with and appropriately implements policies and commitments embraced by EPA and the Commonwealth of Virginia.

V. MITIGATION

Review of Region III's Recommended Determination and the administrative record revealed that the Region's discussion and conclusions with respect to the technical and policy issues associated with the County's proposed mitigation plan are accurate. Section VI.C, MITIGATION (pages 41-42), of the Recommended Determination is hereby adopted as part of this Final Determination, except for the Region's determination that the existing Ware Creek ecosystem cannot be adequately mitigated. The exceptional complexity and values of the proposed project site certainly represent a significant challenge with respect to any mitigation effort. However, in reaching its findings regarding unacceptable adverse effects resulting from the proposed impoundment, EPA considered the potential for James City County's mitigation proposal to compensate for the anticipated adverse effects to wildlife. As discussed below, EPA has determined that the County's mitigation proposal would not adequately mitigate the environmental losses that would result from the project.

James City County has developed a comprehensive mitigation plan which combines elements of wetland creation and wetland and upland preservation and enhancement in an attempt to compensate for the adverse environmental impacts that would result from the proposed water supply impoundment. The Recommended Determination states that, in all probability, James City County's is the most comprehensive mitigation plan put forth to date in this region. EPA reiterates the Recommended Determination's statement that James City County is to be commended for the effort. However, EPA must disagree with the County's opinion that, on balance, project construction along with the proposed mitigation would result in net environmental gains. EPA concludes that, from a technical perspective, the proposed mitigation plan would not adequately offset the anticipated adverse impacts to wildlife. Moreover, under the Section 404(b)(1) Guidelines and from the perspective of sound wetlands policy, it would be inappropriate to approve the proposed project based upon the offered mitigation given EPA's finding that there are practicable, less environmentally damaging alternatives to satisfy James City County's projected water supply needs.

A. THE MITIGATION PLAN

James City County's mitigation plan includes wetland creation, wetland and upland preservation and the creation of potential Great Blue Heron nesting sites in Ware Creek (within the York River watershed); removal of an existing dam to facilitate reconnection of the impoundment wetlands to the downstream system and reestablishment of anadromous fish access, and wetland creation in Yarmouth Creek (within the James River watershed); and extensive preservation of existing wetlands and uplands in the James River watershed (Yarmouth Creek and Powhatan Creek).

More specifically, in the Ware Creek watershed, James City County proposes to create approximately 103 acres of forested,

scrub-shrub and herbaceous wetlands by creating 16 protection basins (impoundments) in the headwaters of the watershed totalling approximately 39 acres and 17 protection basins around the perimeter of the proposed reservoir totalling approximately 64 acres. In addition, the County proposes to create approximately 27 acres of freshwater tidal emergent wetlands downstream from the proposed dam site by backfilling dam material borrow sites with organic material removed from the proposed impoundment and planting freshwater wetland vegetation. The County also proposes to enhance (by replacing water intolerant species with wetlands species to improve cover and food for wildlife) 155 sites totalling approximately 58 acres. The County's proposal with respect to preservation in the Ware Creek watershed includes preservation and enhancement (via selective planting of wetland species to increase cover and food for wildlife) of 34 wetland sites for a total of approximately 145 acres and to maintain and enhance buffer zones (a requirement of the County's Reservoir Protection Overlay District) of 200 feet and 100 feet around the proposed reservoir and all tributary streams, respectively, for a total of 2,500 acres, as well as greenways which would be developed in conjunction with the projected residential development. To attempt to mitigate for the loss of the Great Blue Heron rookery, the County utilized the FWS Habitat Suitability Index Model to locate and design potential nesting sites both within and adjacent to the proposed reservoir.

In the Yarmouth Creek watershed, James City County's mitigation plan includes the removal of an existing dam which would reconnect a waterbody known as Cranston's Pond, as well as approximately 506 acres of wetland, as estimated by the County, both adjacent to and upstream from the Pond to the James River system, and in conjunction with the replacement of a downstream road culver, would attempt to reestablish anadromous fish access to the area. In addition, the County proposes to plant forested, scrub-shrub and herbaceous wetlands species in the approximately 37-acre area which is currently open water but

would be available for planting after the dam is breached. In addition, James City County has proposed to select potential sites, after consultation with the Virginia Natural Heritage Program (VNHP), Virginia Council on the Environment and the Nature Conservancy, and subsequently acquire and preserve approximately $1 million worth of wetlands and uplands in the Yarmouth Creek watershed.[7] Specifically, the County and the Nature Conservancy have proposed the purchase of the 1,320-acre Wright Island Tract, which is located below Cranston's Pond in the lower part of the watershed and contains approximately 873 acres of wetlands, an additional 200-acre tract which is also located below Cranston's Pond and is entirely wetlands and the 167-acre Geddy Tract which is located above Cranston's Pond in the upper part of the watershed and contains approximately 27 acres of wetlands. James City County reports that the Boy Scouts of America own the southern part of the watershed bordering the pond, that there are only two parcels in addition to the Geddy tract along the northern boundary, and therefore, that its efforts would have the effect of preserving most of the watershed surrounding Cranston's Pond. The County has indicated that the availability of the Wright Island, Daniel and Geddy parcels has been confirmed in conjunction with The Nature Conservancy and has proposed to acquire them on or before the date that reservoir construction commences. The County has further indicated that it would utilize the remainder of the $1 million to purchase additional parcels in the Yarmouth Creek watershed or in other watersheds after consultation with the aforementioned organizations. The second aspect of the County's preservation program involves the potential acquisition of preservation easements in the Powhatan Creek/Long Hill Swamp area in James City County.

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[7] In its "Proposal" attached to a letter dated August 18, 1988, the County Administrator stated the participation of these organizations did not indicate either support for or opposition to James City County's proposed reservoir on Ware Creek

The County has indicated that VNHP has identified this area as one of top priority for preservation and that this area is developing rapidly. The County has further indicated that it would consult with the aforementioned organizations and subsequently apply $150,000 toward the purchase of preservation easements immediately after reservoir approval.

B. ANALYSIS OF THE PLAN

Review of the administrative record indicates that the County's proposed wetlands creation efforts are generally feasible. However, EPA concludes that while the County's efforts would provide wetlands creation opportunities, review of results of previous wetland creation efforts reveal the difficulty of obtaining 100 percent success in creating wetlands and, in particular, creating wetland functions and values. For purposes of analysis of the compensatory elements of the County's mitigation plan, however, EPA has utilized a "best case" scenario.

1. Wetlands Creation

In total, the mitigation plan proposes, at best, the creation of approximately 167 acres of wetlands or approximately 44 percent of the 381 acres of existing forested, scrub-shrub and herbaceous wetlands that would be lost as a result of the proposed project. Approximately 103 acres is proposed in the aforementioned protection basins, 27 acres is proposed downstream in the dam material borrow areas and 37 acres is proposed in the "drained area" created by the proposed breaching of Cranston's Pond. EPA believes that these wetlands creation efforts would not adequately replace those wetlands, and their associated wildlife habitat values, that would be inundated and subsequently lost as a result of the proposed project. The proposed acreage is insufficient to replace the extent of wetlands that would be lost. Furthermore, the replacement wetlands would not provide the range of habitat values provided by the existing wetlands. While

the aforementioned 37-acre mitigation effort would (if completely successful) increase wetlands acreage and provide their associated habitat values in the adjacent, James River watershed, it would not serve the habitat needs of the mammals, reptiles or amphibians displaced by the proposed reservoir.

Further, the Corps EIS states that some of the 64 acres to be included in the reservoir perimeter protection basins already includes wetlands and a package submitted by Virginia's Secretary of Natural Resources indicates that approximately 17.5 acres of the proposed 39 acres to be created in the proposed headwater protection basins is already wetlands. Thus, this aspect of the mitigation would in fact create a maximum of only approximately 85 acres of wetlands, assuming that the effort would be 100 percent successful, and considering the unspecified acreage of existing wetlands in the reservoir perimeter protection basins.

The proposed mitigation plan also proposes the enhancement of approximately 58 acres of wetlands at 155 sites. However, the Corps concluded, in its Final EIS, that only a portion of these 58 acres, specifically the area between +32 and +35 feet msl, had the potential to survive as wetlands. Therefore, if completely successful, the mitigation plan would replace approximately 112 acres or 29 percent (plus, possibly some increment of the 58 acres) of the wetlands currently available in the proposed project site. EPA reiterates that this is a maximum estimate which assumes 100 percent success and does not account for the unspecified acreage of existing wetlands in the reservoir perimeter protection basins.

Regarding habitat values, the Corps Final EIS indicates that the 381 acres of wetlands within the proposed reservoir inundation zone are comprised of approximately 152 acres of forested wetlands, 180 acres of herbaceous wetlands and 49 acres of scrub-shrub wetlands. Review of the administrative record indicates that while the County's proposed wetland creation efforts

are generally feasible, there is no information suggesting that the wetland creation effort would produce the existing cover-types or produce them in their current proportions or, therefore, that the created wetlands would exhibit the current range of habitat values. The 33 aforementioned protection basins would be created by constructing impoundments which are approximately five feet high to retain surface water in an attempt to inundate a larger area, thereby providing wetland creation opportunities. In its HEP analysis, FWS concluded that the proposed headwater and reservoir perimeter protection basins would develop into scrub-shrub and herbaceous wetlands, and that because the current seasonal hydrology would be replaced by permanent standing water, the scrub-shrub wetlands would not provide winter foraging habitat as they do now (these wetlands would provide brood rearing habitat for Wood Ducks; this habitat quality is currently provided by the existing wetlands). In addition, EPA notes that the projections for increased salinities downstream as a result of impoundment construction may preclude the establishment of species such as Wild Rice and Arrow Arum which have high food value for waterfowl. EPA concurs with the HEP analysis which concludes that the proposed mitigation (which, for the purposes of the HEP analysis, included the compensatory mitigation but did not include the preservation aspects of the County's plan) is insufficient to compensate for the loss of wetland wildlife habitat values.

2. The Great Blue Heron Rookery

EPA does not concur with the County's conclusion that, on balance, the best opportunity for the long-term survival of the Great Blue Heron rookery in the Ware Creek watershed is offered by construction of the proposed impoundment and implementation of the proposed mitigation plan. The County reached this conclusion by utilizing the Habitat Suitability Index for this species and calculating future scenarios under the current proposal, the three dam alternative and the no project alternative. In

conducting this analysis and reaching this conclusion, the County assumed that the Heron colony would eventually be displaced, with or without the proposed project, and that the County's proposed creation of potential rookery sites, the 100-foot to 200-foot buffer provided by its Reservoir Protection Overlay District (RPOD) as well as the deterrent effect of this buffer and the proposed impoundment on residential development and timbering activities, would provide the most conducive environment for recolonization in the Ware Creek watershed. Information in the administrative record indicates that Great Blue Herons nest in a variety of places and that isolation from disturbance is an important criterion for nest site selection. Although the County intends to avoid the colony during reservoir construction, there would be noise associated with impoundment construction activities as well as subsequent recreational activities on the reservoir, and increasing water elevations within the proposed impoundment would accelerate the loss of the nesting trees. Also, it is uncertain that the County's RPOD buffer would be sufficient to prevent disturbance and subsequent vacation of the rookery as a result of residential development and timbering activities after impoundment construction. In addition, as will be discussed below, there have been numerous projections of the extent of timbering activities and residential development in the Ware Creek watershed. EPA does not believe that the record supports the conclusion that all potential nesting trees will be lost in the absence of the project. EPA concurs with the conclusion of the Corps and FWS that, even with the proposed mitigation, the resettlement of the colony in the watershed is highly uncertain. While EPA agrees that the County's mitigation plan provides potential Heron nesting habitat, we do not agree that project construction, in conjunction with the aforementioned preservation/mitigation elements, represents the optimal scenario for continued Heron nesting in the Ware Creek watershed.

3. Preservation/Enhancement

EPA does not agree that the preservation elements in the County's proposed mitigation plan for the Ware Creek watershed represent substantive environmental gains such that, in conjunction with the aforementioned compensatory elements, they compensate for the anticipated adverse impacts to wildlife. EPA's review of the administrative record indicates that there will be development within the Ware Creek watershed with or without the proposed reservoir. However, EPA does not believe that the administrative record supports the conclusion that in the absence of the proposed reservoir and the County's RPOD, development will occur in a more environmentally damaging fashion.

First, the record is inconclusive with respect to the type of development that would occur in the Ware Creek watershed with or without the proposed impoundment. For example, a report entitled "No Action Plan," August 12, 1986, prepared for Delmarva Properties, Inc., a subsidiary of the Chesapeake Corporation, which owns approximately 40 percent of the watershed, made the following points and conclusions: that without the proposed reservoir, it is unlikely that the County could justify retaining the RPOD Zone designation; that because there is a fundamental conflict between forestry activities and residential development the Chesapeake Corporation, in the absence of the RPOD would likely timber its watershed holdings and subsequently sell them in piecemeal fashion; that the probable result of removing the controls imposed by the RPOD would be scattered, uncoordinated development first adjacent to Ware Creek and then within the watershed that would be cumulatively detrimental to the watershed; and, that the evidence shows that the watershed will develop under any scenario with or without one or more reservoirs, principally because all of the land in the watershed is in private ownership. In a subsequent letter dated April 20, 1987, Delmarva Properties advised FWS that: the assumption in the HEP analysis did not reflect Chesapeake Corporation's intentions for the property over the next 50 years; currently, much of Chesapeake's holdings in the interior of the watershed are des-

ignated "special interest property" owing to its greater value for commercial, industrial or residential development; in the absence of the proposed reservoir or in conjunction with the three dam alternative, many of these holdings, which include wetlands, would lose the aforementioned designation (timber harvesting would become a more profitable use of the property) and be timbered and subsequently reforested and/or sold to other potential users; if the reservoir is constructed, only selective cutting would occur on most of the property. Subsequent newspaper articles, however, indicate that the Chesapeake Corporation may have changed its intentions, at least with respect to part of its watershed holdings. These articles, published in March 1989, indicate that Stonehouse, Inc., a subsidiary of the Chesapeake Corporation, is planning to construct a 7,230-acre development to include residential, commercial and industrial facilities. Approximately 4400 acres of this proposed development are located within the Ware Creek watershed. The articles further state that Stonehouse has proposed buffer zones, storm water management ponds and wetland areas to protect the Ware Creek watershed and also proposed to preserve the land and build some small lakes if the reservoir were not built. The aforementioned articles suggest that the Chesapeake Corporation has revised not only its intentions with respect to its activities within the watershed, but also its previous conclusions regarding the relationship between the proposed reservoir and residential development.

James City County has opined that the potential for development and timbering activities to result in significant losses of wetlands and uplands habitat is such that, on balance, less environmental loss will be realized if the County's proposal, with the various habitat creation and preservation elements, is allowed to proceed. In its Great Blue Heron mitigation plan, the County projected that under the no-project and the three dam alternatives scenarios, the loss of forested wetlands and uplands due to residential development and timbering activities would be significant enough to potentially deprive the Herons of future nesting sites.

EPA notes that the aforementioned newspaper articles appear to contradict the County's conclusions in this regard. In addition, the HEP analysis also made projections after coordinating with Delmarva Properties, Inc., and the James City County Planning Commission and predicted that while residential development and timbering activities would result in a decline of upland forested habitat, including some selective cutting in forested wetlands, habitat values associated with this cover type would increase as the stands mature.

Further, EPA does not believe that the record supports the conclusion that there will be less habitat or that this habitat will be of lower quality without the County's RPOD. EPA notes that at the time of this writing, the RPOD is in the process of revision. In addition, in response to the County's legal counsel who advised that the County would consider implementing EPA's recommendations with respect to the RPOD (especially if it would affect the outcome of EPA's 404(c) determination), EPA notes that revisions to the RPOD would not address the totality of the Agency's concerns in this matter. The primary purpose of the County's RPOD, which includes the proposed 2500-acre buffer around James City County's portion of the reservoir, is to provide water quality protection for the proposed reservoir. A package submitted by Virginia's Secretary of Natural Resources states that the RPOD does not restrict residential landscaping to residential edges nor assure good habitat along the reservoir edge. Also, discussions with James City County revealed that while the RPOD would prohibit certain types of development (to the extent that this development would produce runoff which has the potential to contain pollutants which are prohibited by the RPOD), it would not, except for the buffer zone around the proposed reservoir, provide for any more conservation than the zoning which would apply in the absence of the RPOD.

EPA also notes that, if the reservoir is not built, the terrain of the Ware Creek watershed may serve to somewhat constrain

the extent of development as well as its encroachment on the aquatic resources of the watershed. As the No Action Plan states, the terrain is a deeply incised flat plateau with 5 percent to 20 percent side slopes draining to Ware Creek. The Plan goes on to state that level areas are confined to wetlands, stream beds and the finger-like ridges which are the residuals of the old plateau and that this terrain imposes very definite restrictions on development. Discussions with FWS as well as observations made during field visits (including the April 28, 1989 visit with representatives of James City County) lead EPA to concur with the statements in the Plan and conclude that the terrain in the Ware Creek watershed will serve to limit the amount of development, as well as its encroachment on and subsequent impacts to the aquatic resources of the watershed. In addition, the aforementioned No Action Plan as well as testimony at EPA's public hearing indicates that James City County has the capacity to be strict and innovative in developing land use controls which suggests that, even without the RPOD, residential development and timbering activities will be conducted in accordance with County controls and will not necessarily occur in a more environmentally destructive fashion. Regarding the RPOD's reservoir buffer, the quality of this buffer as habitat or as a corridor to facilitate wildlife movement would be adversely affected by the topography of the proposed reservoir banks, the abrupt transition from the aquatic to upland habitat, the juxtaposition of the buffer to remaining/compensatory wetland areas, and the degree of fragmentation of adjacent habitats by residential development and/or timbering activities.

Since the record is inconclusive with respect to the extent and type of development which would occur within the Ware Creek watershed, the relative value of the County's proposed preservation and enhancement of approximately 145 acres of forested wetlands cannot be conclusively determined. EPA notes that these existing wetlands continue to be subject to regulation under Section 404 which applies to almost all of the activities we

understand to be planned for this area. EPA also notes that according to the package submitted by Virginia's Secretary of Natural Resources, the forested wetland areas would theoretically be protected by the RPOD (that is, to the extent that they are located within the aforementioned 100-foot to 200-foot buffer). Therefore, the County's offer of preservation may, indeed, add relatively little to the existing level of protection for these wetlands and thus provide little real compensation for the actual, certain loss of wetlands associated with the proposed reservoir project.

As previously mentioned, the County's proposed mitigation plan also contains preservation elements in the Yarmouth Creek watershed and in the Powhatan Creek/Long Hill Swamp watershed. EPA believes that this aspect of the plan would produce environmental results if it preserves areas that would otherwise have become developed. However, EPA reiterates that the wetlands in these parcels continue to be subject to regulation under Section 404. In addition, no mitigation "credit" was given in the HEP analysis for the preservation aspects of the plan around Cranston's Pond because it was concluded that it was unlikely that this area would undergo residential development in the foreseeable future because of the current zoning as well as the lack of public utilities. Also, while the breaching of Cranston's Pond may result in additional wetlands as well as reestablishment of anadromous fish access to and detrital export from this part of the Yarmouth Creek watershed, these aspects of the proposed mitigated plan would not provide replacement habitat for wildlife displaced from the Ware Creek watershed as a result of the proposed impoundment.

C. DISCUSSION

In conclusion, EPA reiterates that James City County is to be commended for its efforts in formulating the proposed mitigation plan. However, EPA also reiterates the statement in the Recom-

mended Determination that actions to minimize the environmental effects of permit proposals should follow the sequence: avoid, minimize and restore, in decreasing order of preference. As will be discussed later, EPA believes that there are practicable, less environmentally damaging alternatives to satisfy the projected water supply needs of James City County. Therefore, in addition to the concerns expressed above regarding the adequacy of the mitigation plan to compensate for wetlands values which would be lost, EPA believes the mitigation plan to be inappropriate because of the conclusion that the adverse impacts anticipated as a result of the proposed impoundment are unnecessary.

VI. ALTERNATIVES

Review of Region III's Recommended Determination and the administrative record revealed that Region III's discussion and conclusions with respect to alternatives is accurate. Section VII, ALTERNATIVES (pages 46-47) of the Recommended Determination, is hereby adopted as part of this Final Determination. Additional information and discussion is provided below as necessary. EPA reiterates that the Section 404(c) regulations (Section 231.2(c)) provide for EPA to consider the availability of practicable alternatives. (Section 230.10(a) of the Guidelines) in reaching its conclusions with respect to the unacceptability of impacts associated with proposed discharges.

A. JAMES CITY COUNTY'S WATER SUPPLY NEEDS

EPA utilized the range of projected water needs contained in the administrative record for the purpose of this Section 404(c) determination. The record reveals that by the year 2030, James City County will require between 16.9 million gallons of water/day (mgd) as projected by the Corps of Engineers and the Virginia State Water Control Board (SWCB), and 18.2 mgd as pro-

jected by James City County[8]. These projections are based upon historical water use in four major categories: residential, industrial, commercial and "unaccounted for" water use. Review of the administrative record as well as discussions with the Corps revealed that the discrepancy in these projections is due primarily to James City County's projections of increased residential water use which is based upon more recent data on population growth in the County. The Corps Final EIS on the County's project states that since the County's population had already exceeded the Corps 1990 population projections by 1986, there is reason to believe that the Corps projections may be low. On the other hand, the Corps projections of need for water supply are based primarily upon projections of industrial growth, and James City County's Master Water Plan states that major commercial and industrial customers account for approximately 70 percent of the County's 1985 water demand (water use by Anheiser-Busch (the brewery and Busch Gardens) represents a substantial percentage of this demand). EPA concurs with the Corps Final EIS on the County's proposal that it is not unusual for 50-year projections made by different agencies to differ.

The County has indicated that its current water supplies include available groundwater sources provided by the James City Service Authority (JCSA) totaling 1.6 mgd and existing service

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[8] The record contains other water need projections for James City County. For example, the Regional Raw Water Study Plan, 1990-2030, March 1989, prepared for theCity of Newport News, the City of Williamsburg and York County projected the water demand for James City County to be 19.7/20.1 mgd (with and without conservation, respectively). However, in a letter dated August 18, 1988, James City County stated that it believed its projection of 18.2 mgd to be the most reliable estimate available. The County apparently arrived at this figure after conducting three studies in 1983, in 1986 and 1987, which projected higher water demands of approximately 18.6 mgd to 18.9 mgd. In addition, the 18.2 mgd projection was included in materials the County submitted at EPA's public hearing on January 18, 1989 and the County has not advised EPA of any revisions to this figure.

from Newport News and Williamsburg totaling 5.4 mgd and .3 mgd respectively, for a total of approximately 7.3 mgd. To address the anticipated need for an additional 9.6 mgd to 10.9 mgd, the County's plans include increasing service from Newport News an additional 2.3 mgd to 7.7 mgd, developing and additional 2.0 mgd of groundwater for a total of 3.6 mgd, and constructing the Ware Creek Reservoir to provide 9.4 mgd. This would provide a total of approximately 20.7 mgd (this figure does not include service from Williamsburg which is scheduled to be terminated in 1999 with JCSA providing service to the affected area). In accordance with a current agreement concerning the Ware Creek reservoir, the adjacent New Kent County is entitled to 30 percent of the proposed reservoir's yield, which would reduce the aforementioned total yield for the County to 17.9 mgd.

B. JAMES RIVER PIPELINE

The Recommended Determination discussed a pipeline from the James River with an intake above Richmond within the context of regionally oriented alternatives. The Corps determined this to be the preferred alternative for the northside Hampton Roads region (which includes James City County) in its water supply EIS for Hampton Roads, Virginia dated December, 1984. The James River pipeline also emerged as a potential alternative to James City County's proposal on Ware Creek. However, the administrative record (specifically the Corps permit decision documents and the James River Pipeline Alternative Analysis prepared by FWS' Gloucester Point Office in conjunction with the Corps EIS on the proposed Ware Creek project) supports the conclusion in the Recommended Determination that minimum in-stream flow requirements of the James River are an aspect of this proposed plan which are currently the subject of an unsettled debate. Indeed, applying the minimum in-stream flows recommended to date by FWS and NMFS would reduce the yield of this alternative from approximately 40 mgd to between 11 mgd and 14 mgd. While this alternative would still provide sufficient water for

James City County's purposes under these circumstances, the record indicates that the existing institutional barriers pertaining to the inter-basin transfer of water are such that at this time, a pipeline to the James River may have limited potential as a component of a regional solution, much less a solution to the County's water supply problems.

C. GROUNDWATER

As the Recommended Determination states, groundwater is currently an important source of drinking and process water for many users in the northside Hampton Roads region. The administrative record contains numerous studies that have been conducted on local, state and Federal levels to determine the feasibility of utilizing groundwater for either local or regional water supplies. Indeed, the analysis of the groundwater available to meet James City County's water supply needs necessarily involves regional as well as local elements.

EPA's review of the administrative record revealed that the potential for utilizing groundwater as an element of a water supply above the currently proposed 3.6 mgd was not considered. In its James Water Supply Plan, the SWCB discusses studies (such as Ground-Water Hydrology of James City County prepared in 1980 by the U.S. Geological Survey) which conclude that an additional 10 mgd of groundwater are available, if obtained with evenly distributed pumping centers, and recommends that the potential benefit of groundwater as a supplemental supply in conjunction with other water sources of the Lower Peninsula be given strong consideration. In its permit decision document on the Ware Creek proposal, the Corps concluded that James City County's pursuit of the entire 10 mgd would be at the expense of adjacent areas, such as Newport News, which are also investigating potential use of the same groundwater source. The Corps also concluded that this would preclude the available groundwater from being incorporated into a regional water supply plan. EPA's

review of the administrative record and EPA's consultation with the County indicated that while state law authorizes the establishment of a Groundwater Management Area within the region as a framework to facilitate regulation of groundwater withdrawal and subsequent use across the various municipal boundaries within the region, and the state is considering establishing such an area, no formal action has been taken to date in this regard. Under this scenario, over-reliance by any municipality, including the County, upon the remaining groundwater resources may result in an undependable water supply as well as deterioration of the water quality of the involved aquifers. The information in the record addressed the potential for and the ramifications of the County's withdrawal of the remaining 10 mgd of groundwater as its sole source to meet its projected water supply needs. There is no information in the record that addresses the potential for the County to withdraw additional quantities of water above the currently proposed 3.6 mgd (but below 9.4 mgd) to meet its future water supply needs.

EPA notes that the record contains information relating to the potential for additional groundwater withdrawals to result in surface water depletion and subsequent wetlands losses. Specifically, the Water Resources Investigations Report 88-4059 by the U.S. Geological Survey reported the results, which included identification of potential areas of increased surface water depletion, of withdrawing additional groundwater under four different scenarios utilizing a digital flow model. James City County subsequently prepared a report which projected substantial wetlands losses under one of the scenarios which projected the withdrawal of significantly more groundwater than is at issue in this case. EPA is aware of the potential for surface water depletion; however, there is no information in the record that addresses this potential for the withdrawal of between 3.6 and 9.4 mgd.

EPA concludes, therefore, that it has not been demonstrated that groundwater could not provide a larger portion of the projected demand than the 3.6 mgd currently envisioned by the

County. Further, it has not been demonstrated that this approach would result in surface water depletion or wetlands losses. The potential for this to occur should be part of any future groundwater investigations.

As with freshwater aquifers, EPA's review of the administrative record revealed that utilizing desalinated groundwater as a component of a water supply was not considered. Aside from using freshwater aquifers, there are several studies in the administrative record which contain analyses of desalinization of brackish groundwater as well as other sources. These include the Corps Water Supply Study for Hampton Roads, which included desalinization of water from the Atlantic Ocean and the Chesapeake Bay as potential alternative water supplies for southside and northside Hampton Roads, respectively, the Corps Final EIS on the Ware Creek proposal which discussed desalinization of groundwater and water from the Chesapeake Bay, and the Final Engineering Report prepared for James City County in October, 1987 which specifically addressed the feasibility of desalinization of groundwater in the County. Generally, the Ware Creek EIS and the aforementioned study prepared on behalf of the County addressed the potential for desalinized groundwater to provide the entire, anticipated yield of the proposed Ware Creek reservoir (9.4 mgd) and concluded that this approach to providing water is energy-intensive, expensive and involves the technical and regulatory problems associated with brine disposal. In addition, these reports generally conclude that the variation in groundwater quality is such that additional site-specific pilot studies would be necessary prior to making conclusions with respect to the applicability of desalinization of brackish groundwater either for local or regional water supplies. For example, the Final Engineering Report prepared for James City County in October, 1987 concluded that reverse osmosis is a technically feasible alternative to the proposed Ware Creek reservoir but emphasized that in the final analysis, the feasibility of a specific project depends entirely on the actual groundwater analysis of the wells developed

for the project. In addition, this report recommends the installation of 50 wells spread over an approximate 70-square mile area to provide the anticipated Ware Creek yield and prevent excessive aquifer drawdown as well as impacts to other groundwater users.

While EPA acknowledges that additional studies will be necessary, we also stress that the record contains insufficient information to conclude that desalinization of groundwater is not a potential viable component of a comprehensive water supply strategy for James City County. The study funded by EPA and completed in 1987 which addressed the feasibility of reverse osmosis in Gloucester County, Virginia, as well as the results of the City of Suffolk's subsequent demonstration project based upon the electrodialysis reversal, are convincing evidence that the treatment of brackish groundwater should receive further investigation as a viable option for meeting at least part of the water supply needs of James City County.

D. THREE DAM ALTERNATIVE

This structural alternative to the Ware Creek proposal would involve the construction of three smaller impoundments in the upper Ware Creek watershed and provide approximately 6.1 mgd of water with correspondingly less environmental impacts. This alternative was discussed in the Corps EIS on the County's proposal and its impacts on wildlife habitat were compared to the County's proposal and the no-project alternative in the FWS' HEP analysis[9]. To summarize, the three dam alternative would

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[9] The HEP analysis assumes the same mitigation proposal for both the James City County proposal and the three dam alternative. Also, the HEP analysis assumes different baselines for each of these alternatives reflecting different degrees of development and timbering activities and each type of impoundment.

result in the loss of less total acreage[10] and less wetlands, and result in less direct loss of wildlife habitat. The Corps Final EIS on the proposed Ware Creek proposal states that this alternative would inundate approximately 275 acres of aquatic systems wetlands (less acreage than the County's proposal) comprised of bottomland hardwood forest, scrub-shrub swamp and open water. The HEP analysis assessed the impacts to habitat values in the following existing cover-types: upland mixed pine-hardwood forest, upland hardwood forest, forested wetland, scrub-shrub wetland, herbaceous wetland, lacustrine (lake) open water, and estuarine open water, and supported the conclusion that construction of this alternative would result in less direct acreage loss for every cover-type predicted to suffer a loss when compared to the County's proposal. The HEP analysis also indicated that the three dam alternative would result in less losses of habitat values in all of the wetland and estuarine open water cover-types. In addition, this alternative would avoid impoundment of the Great Blue Heron rookery and provide larger volumes of freshwater and nutrients to downstream areas, thus reducing impacts to these areas and, ultimately, the Chesapeake Bay. The Corps Final EIS identifies the creation of silt basins and low water impoundments as well as the "edge" created by the three water supply impoundments themselves as opportunities for mitigation. The HEP analysis conducted by FWS provides information with respect to the wildlife habitat losses anticipated as a result of this alternative which could be incorporated into a more detailed mitigation approach.

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[10] The HEP analysis predicts that this alternative will result in a greater loss of habitat values for both the upland hardwood forest and the upland mixed pine-hardwood forest cover-types than the County's proposal. However, this was projected to occur as a result of increased residential development and timbering activities that were predicted to occur in association with this reservoir alignment and not as a direct result of this alternative.

EPA concludes, after review of the administrative record and discussions with the Corps Norfolk District, that the three dam alternative would satisfy James City County's projected water needs despite a current agreement which entitles the adjacent New Kent County to 30 percent of the yield of the County's currently proposed reservoir. In its response to the Recommended Determination, James City County's Office of Development Management stated that the Ware Creek reservoir is a joint project with New Kent County which is entitled to receive 30 percent of the reservoir's safe yield, and that New Kent County objected to the smaller impoundments on Ware Creek; in addition, James City County indicated that even if this objection could be overcome, it is likely that 30 percent of the yield of any such project would be allocated to New Kent County, thereby resulting in too small a yield for James City County's purposes. After reviewing the record, EPA has determined that James City County's arrangement with New Kent County --- more specifically, New Kent County's 30 percent entitlement --- has not been consistently factored into the analysis on this project. For example, while the Corps discussed the fact that the three dam alternative would result in insufficient yield when compared to the proposed impoundment in its permit decision documents, it did not mention the New Kent County arrangement as a factor. Discussions with the Corps revealed that it did not consider the 30 percent entitlement a controlling factor in its analysis of James City County's project because current water need projections indicate that New Kent County will not need the water by 2030 and New Kent County does not have the necessary water delivery system in place to utilize the proposed reservoir, nor are there any current plans to construct such a system. Discussions with the Corps also revealed that one of several concerns it had with the three dam alternative was its decreased yield (approximately 6.1 mgd as compared to 9.4 mgd) because it would result in an approximate 3.3 mgd water supply deficit within a regional, as opposed to a James City County, context. It is also noteworthy that the aforementioned study on the feasibility of reverse osmo-

sis that was conducted for James City County addressed a design yield of 9.4 mgd and not 6.6 mgd (9.4 MGD minus the 30 percent entitlement). Presumably, this report could have addressed a design yield of 6.6 mgd, with potentially different conclusions with respect to well size and spacing, since no entitlement to New Kent County would be at issue if water were obtained from this source. EPA also notes that New Kent County is not within the same region as James City County for the purposes of water supply analysis (*i.e.* is not within the Lower Peninsula region) and reiterates that apparently New Kent County is not projected to need its 30 percent entitlement by the year 2030. Perhaps future negotiations/agreements between James City and New Kent County will reflect these factors. Further, EPA notes that under the three dam alternative the 30 percent entitlement might apply only to the yield of Dam Site 1, which is the only proposed impoundment which would be located in New Kent County. This would reduce New Kent County's entitlement to approximately one mgd and result in a yield of approximately 5.1 mgd, which, in conjunction with the County's other water supply measures, would provide approximately 16.4 mgd. Further, subtracting the 30 percent entitlement from the entire three dam yield, this alternative would, in conjunction with James City County's currently proposed water supply measures, provide approximately 15.6 mgd which, in conjunction with other approaches (*e.g.*, conservation, additional groundwater withdrawals), is within the range of projected need identified in the record.

In its permit decision documentation the Corps concluded that the three dam alternative would result in 65 percent of the wetlands and vegetated shallows impacts as compared to the County's current proposal but would leave the aforementioned 3.3 mgd water supply deficit for the Lower Peninsula region. The Corps also concluded that since no practicable, less environmentally damaging regional alternative solution had been identified. It must be assumed that the additional 3.3 mgd needed to make up the difference between the three dam alternative and James

City County's proposal would come from a more environmentally damaging source. A review of the record reveals, however, that, from a James City County perspective, the yield anticipated from the three dam alternative of approximately 6.1 mgd, in combination with the County's other currently proposed water supply elements, would provide approximately 17.4 mgd which is within the range of projected need identified in the record. As previously stated, there is no information in the administrative record that indicates that additional approaches, such as conservation or groundwater withdrawals, could not be used to meet James City County's needs for water, even without New Kent County's 30 percent entitlement, if necessary.

E. WATER USE AND CONSERVATION

EPA notes preliminarily that the record reflects that James City County cannot unilaterally, without assistance from the state government, decrease the projected water supply demand by restricting or limiting water hookups. The Corps Final EIS cites case law restricting a municipality's legal ability to pursue this course of action. Because the Commonwealth of Virginia adheres to a legal interpretation of the state Constitution, known as the Dillon Rule, municipalities such as James City County cannot adopt and enforce local ordinances not already provided for by state law. This aspect of Virginia state law and its ramifications with respect to the case at issue were reiterated at EPA's public hearing and by James City County representatives during consultation.

EPA's review of the administrative record has revealed that while conservation is an important element of water supply planning for James City County, the record is inconclusive as to how much water could be saved through conservation efforts. James City County has adopted the Virginia Uniform Statewide Building Code, which has required the installation of water-saving plumbing fixtures in new construction since 1982 and the JCSA

has issued Regulations Governing Utility Service which establish standards for flow rates for fixtures, public lavatories and car washes. James City County factored a 13 percent conservation saving into its projected needs based upon its conclusion that over 60 percent of the housing stock which existed prior to 1982 would retrofit older plumbing fixtures at a rate of approximately 1 percent per year until 2030.

Disagreements as to how much water could be conserved in this matter (and how much conservation should be incorporated into the County's water demand projections) stems from differing assumptions concerning how these devices would be used (*e.g.*, whether more efficient toilets would be flushed once or twice) and the rate at which older fixtures would be replace with more water efficient ones. SELC for example, asserts that the Corps, in its conservation savings estimate of 6 percent for the Lower Peninsula in the Hampton Roads Water Supply Study, inappropriately concluded that water efficient toilets would have to be flushed more often and that persons with flow-restricted shower heads would take longer showers. SELC argues that 20 percent savings would be realized if these unsupported conclusions were removed.

There is also disagreement in the record regarding the degree of potential for conservation savings for industry. The Corps and the SWCB assumed a 5 percent increase in industrial water efficiency (which, presumably, was incorporated into their respective water demand projections) and SELC, in drawing comparisons to industrial energy conservation accomplishments in the 1970s and 1980s, concluded this projected increase could be as high as 20 percent.

Regarding water supply design, James City County's proposed impoundment is projected to satisfy the County's projected water supply needs for the duration of the drought of record (in this case, that which occurred in 1980-1981). SELC and CBF

have argued that drought period restrictions should be incorporated into James City County's water demand projections. SELC has stated that incorporating drought period restrictions for one out of every 20 years into water demand projections would lower the projected deficit for the Lower Peninsula by approximately six mgd.

There is insufficient data in the record to enable EPA to resolve the aforementioned discrepancies regarding potential water conservation savings resulting from the installation and utilization of water saving plumbing fixtures. Potential increases in industrial water efficiency could have a significant effect on future water demand, especially if it reaches the 20 percent figure projected by SELC, since commercial-industrial use is the major portion of the County's current water demand. JCSA adopted a resolution on May 1,, 1989 which increased the retail service rate for water service and imposed a summer conservation surcharge. This encourages conservation more than a declining or constant rate structure would. This new resolution also, presumably, will result in additional reductions in future water demands. However, the effect of these measures cannot be quantified at this time.

As may be seen from the previous discussion, conservation measures have been incorporated into water demand projections and the record reflects there may be additional opportunities to reduce this demand even further by additional conservation measures. EPA encourages the evaluation and consideration of conservation, including the incorporation of drought period restrictions, to lower projected demands, as an alternative to more environmentally damaging water supply components.

F. DISCUSSION

The previous discussion concentrated upon alternative water supply solutions that emerged through the Corps' regulatory permit process and is by no means inclusive. As previously stated,

the water supply needs of this area of Virginia have been studied extensively and independently at the local, state and Federal levels and numerous alternatives, regional as well as specific to James City County, have been identified. However, the decision at hand includes a determination as to whether there is a practicable, less environmentally damaging alternative, or combination of alternatives, to supply James City County with sufficient water supply to meet its projected needs. EPA believes that the administrative record supports a finding that there are such alternatives.

EPA continues to believe that conventional and unconventional treatment of groundwater may be a viable option for James City County and that, given the anticipated environmental significance of impoundments in the Ware Creek watershed, additional consideration of these alternatives is warranted. EPA recognizes that the groundwater and desalinization alternatives (as well as the James River pipeline alternative) have regional implications; that is, they are potential components of a comprehensive water supply for the Lower Peninsula region and their implementation involves inter-jurisdictional implications. The County's and the Corps' analysis of the potential use of groundwater and/or desalinization inappropriately focused on each of these alternatives' potential alone to provide the entire anticipated Ware Creek reservoir yield rather than a portion of the total yield. Thus, the analyses exclude the possibility of combining elements of several alternatives to obtain the desired yield.

EPA reiterates the point in the Recommended Determination that the SWCB's establishment of a Groundwater Management Area, pursuant to the Virginia Groundwater Act of 1973, would be very helpful in conjunction with this effort by regulating and protecting the involved aquifers for the benefit of James City County as well as the rest of the region. It should be noted, however, that if, in conjunction with the establishment of such an area, the state does not allow the withdrawal of groundwater for municipal water supply, as asserted by one official during the

aforementioned meeting on May 8 with the Administrator, this would limit this alternative's potential as a component of a water supply to whatever quantities those circumstances allowed. EPA reiterates the Recommended Determination's view that if further evaluation reveals groundwater to be impracticable, then the three dam alternative, with appropriate mitigation, should receive additional consideration.

As has been previously mentioned, the issue of local versus regional water supply problems and potential solutions pervades this case. Since the early 1980s, EPA and the Corps have attempted, unsuccessfully, to convince the Commonwealth of Virginia to take a more active role in facilitating a regional approach to the water supply problems of the Lower Peninsula area. James City County has also been active in this regard. EPA has continued to state its preference throughout the Corps regulatory permit process for an analytical approach that would identify the water supply needs throughout the Lower Peninsula region and the most environmentally sound alternatives (whether small-scale or large-scale) that are practicably available to address the regional needs. In response, James City County has proposed that its Ware Creek proposal has potential for regional application. For example, the County has proposed that the surplus from the reservoir could be made available for regional use until the full need in James City County is realized. During consultation, the County proposed that connecting the Ware Creek reservoir to Newport News' Little Creek reservoir could double the Ware Creek yield to approximately 20 mgd which, when combined with the regional water conservation savings of approximately 17 mgd calculated by SELC, had the potential to address the 40 mgd need projected for the Lower Peninsula. The County subsequently submitted a report to support its view. In its permit decision documents, the Corps stated that connecting the proposed Ware Creek impoundment to the overall Lower Peninsula water supply could have a synergistic, as opposed to merely an additive, effect on the regional safe yield since more water could

be stored and subsequently used in a more efficient manner. However, James City County and its neighboring jurisdictions have not mutually agreed on the creation of a regional approach, nor have they conducted an analysis that shows Ware Creek to be a necessary component of such a regional approach. Indeed, such an approach may not include a Ware Creek reservoir.

Throughout, the administrative record reflects a failure to assess practicable alternatives composed of multiple sources. EPA believes that the record does not support a finding that less environmentally damaging alternatives to the proposal do not exist. In fact, EPA believes that the record demonstrates that certain practicable alternatives are available, and that others may prove to be available, to meet the needs of James City County by themselves or in combination.

VII. CONCLUSIONS AND FINDINGS

This Final Determination under Section 404(c) of the Clean Water Act addresses unacceptable adverse effects to wildlife. The Section 404(c) regulations define an unacceptable adverse effect as an impact on an aquatic or wetland ecosystem which is likely to result in significant degradation of municipal water supplies or significant loss of or damage to fisheries, shellfishing, or wildlife habitat or recreation areas. Section 231.2(e) of the Section 404(c) regulations states that the evaluation of the unacceptability of such impacts should consider relevant portions of the Section 404(b)(1) Guidelines.

Review of the Recommended Determination and the administrative record supports the conclusion that the Ware Creek system in the proposed impoundment area and downstream of the proposed dam is comprised of a mix of diverse, productive vegetated wetland types and that the juxtaposition of these wetlands communities both to each other and to adjacent open water

provides exceptional natural habitat upon which a variety of wildlife species depend for all or part of their life cycle. The complex mosaic of wetland, upland and open water systems which would be adversely impacted by the proposed project supports habitat for a multitude of terrestrial and aquatic species. The area supports favorable breeding, nesting, foraging and resting habitat used seasonally by migratory bird species, including a significant population of Great Blue Heron which utilizes a rookery within the proposed inundation area and a concentration of Black Duck which depend upon the Ware Creek wetlands for critical nesting, foraging and wintering habitat. The Black Duck has experienced serious population declines on a National and regional scale due to habitat loss. The administrative record also indicates that the area of the proposed impoundment supports aquatic breeding and nursery habitat utilized by migratory wildlife, including the semi-anadromous White Perch and other species important to commercial and recreational fisheries. The administrative record also indicates that the current Ware Creek system provides suitable seasonal spawning habitat for anadromous fish species. In addition to seasonal use of the subject area by migratory wildlife, the Ware Creek wetlands provide habitat for resident populations of birds, such as the Wood Duck, and mammals, such as Whitetail Deer, which thrive in the rich and varied watershed habitat, as well as aquatic mammals and amphibians which depend upon the blend of vegetated communities and associated aquatic systems. Various mammals, such as the Muskrat and River Otter, depend upon the vegetated aquatic communities of Ware Creek for a majority of their life-cycle.

In addition to direct loss of habitat associated with implementation and operation of the proposed impoundment, the administrative record confirms that the project would alter freshwater flow out of the Ware Creek system and would thereby adversely impact normal energy export processes which provide support for wildlife food-chain mechanisms downstream of the proposed impoundment. The administrative record indicates that not only

would placement of the dam obstruct the flow of organic material through the present system, but also withdrawal of water from the reservoir would substantially decrease both the amount of freshwater leaving the system and the amount of organic material transported from the system.

Review of the Recommended Determination and the administrative record for this case demonstrates that the relatively undisturbed vegetated wetlands and open water in the Ware Creek system which would be affected by the proposed project provide important wildlife Habitat from a site- specific and regional standpoint, and contribute to the overall environmental integrity of the York River estuary and Chesapeake Bay. The administrative record corroborates the judgment that elimination of vegetated wetlands and shallow water from the project site would adversely affect a substantial component of the wildlife populations currently utilizing the site and that implementation and operation of the proposed water supply reservoir would result in adverse secondary and cumulative effects to wildlife which currently utilize habitat associated with wetlands in the proposed project site. EPA concludes that the environmental losses and indirect environmental impacts associated with the proposed Ware Creek project would be profound and contrary to the goals of Section 404 of the Clean Water Act.

EPA also concludes that the proposed mitigation plan, although ambitious, would not compensate for the anticipated losses and disagrees with the County's opinion that, on balance, project construction, along with its proposed mitigation, would result in net environmental gains. Inundation of the Ware Creek system would result in the direct loss of less mobile wildlife species and displace more mobile individuals thus inducing stress to surviving individuals by forcing them to compete for food, habitat and other life requirements. This stress would be induced to all species but has the potential to result in the most serious adverse impacts to Great Blue Herons, Black Ducks and larger animals

such as Whitetail Deer. The proposed compensatory wetlands creation aspect of the County's mitigation plan would not adequately replace either the acreage of wetlands or the range of wildlife habitat values that would be lost as a result of the proposed project. In addition, EPA believes that the Ware Creek watershed will be developed with or without the proposed reservoir and that the record does not support projections as to the location or the extent of the development or the conclusion that this anticipated development would be accomplished in a less environmentally damaging manner due to the County's RPOD. In addition, while the RPOD will preserve approximately 2500 acres of, this acreage will exist only as a 100-foot to 200-foot buffer zone around the proposed reservoir and will be limited in its wildlife support capabilities. While the proposed reservoir would greatly expand lacustrine habitat, it would do so at the expense of the existing more biologically productive adjacent wetlands as well as uplands and their respective habitat values. The proposed creation and/or preservation of wetlands and the preservation of uplands would not compensate for these losses. EPA also does not concur with the County's conclusion that, on balance, the best opportunity for the survival of the Great Blue Heron rookery in the Ware Creek watershed is offered by project construction with the proposed mitigation. Project construction would accelerate the loss of nesting trees, and resettlement of the colony in the watershed as provided for in the proposed mitigation is, at best, uncertain. EPA reiterates that the record does not support the conclusion that there would be less noise and, therefore, less disturbance of the colony, or more available nesting trees in the Ware Creek watershed with the RPOD and the proposed reservoir.

The preservation elements of the County's mitigation proposal in Yarmouth Creek and in Powhatan Creek may provide environmental benefits to the extent that they protect areas that would otherwise be developed, and the breaching of Cranston's Pond may result in additional wetlands as well as reconnection

of existing wetlands and reestablishment of anadromous fish access to and detrital export from this area. However, even if these benefits materialize (and some are highly uncertain, as discussed previously) this aspect of the proposed mitigation plan would not provide habitat for much of the wildlife displaced as a result of the proposed project. Moreover, under the Section 404(b)(1) Guidelines, the proposed mitigation does not justify approving the project, because there are practicable, less environmentally damaging alternatives to satisfy the projected water supply needs of James City County.

In its permit decision documents, the Corps stated that years of intensive study have not identified a practicable, less environmentally damaging regional alternative than Ware Creek and that it appears likely that both Ware Creek and groundwater will be needed to meet the Lower Peninsula region's water supply needs. Clearly, the Corps applied regional considerations in its evaluation of the availability of practicable alternatives to the Ware Creek proposal as a local water supply project and factored in its concern that a reservoir on Ware Creek is a necessary component of a regional water supply. However, as noted by the Corps and James City County, within the current institutional framework, the County does not have the authority to effect a regional water supply plan. Nor have institutional arrangements with the state and neighboring local jurisdictions been made to even propose such a plan. Therefore, although EPA recognizes the need for a regional water supply solution, EPA must necessarily constrain its review of this case, as well as its findings with respect to unacceptable effects, to the local project and associated purposes presented and analyzed by James City County. While connecting a reservoir in James City County with Newport News' system makes it more "regional in character," it still is not in itself a solution for the Lower Peninsula region. The potential of James City County's current proposal as a solution (or component of same) to the projected water supply needs of the Lower Peninsula region must be considered within a regional analysis of re-

gional water supply demands, potential alternatives, environmental impacts and mitigation opportunities. In addition, this analysis must be accomplished with the full support of all involved municipalities and responsible state and local agencies. Indeed, information in the record indicates that some of James City County's potential partners in a regional approach may not regard Ware Creek as a necessary component of a regional water supply. Formulating and developing regional alternatives at this time for which institutional barriers exist which have the potential to retard or prohibit their implementation and for which no regional concurrence has emerged is inefficient, not in the best interest of the Lower Peninsula, and simply too speculative to rely upon as a basis for the destruction of wetland communities that currently provide exceptional habitat for diverse species of wildlife. As previously mentioned, EPA, as well as the Corps, has attempted to convince the Commonwealth of Virginia to take a leadership role in this matter. To date, this has not occurred. The record reveals that there are practicable alternatives available to James City County to provide sufficient water to meet its local projected water supply needs at less environmental cost than the Ware Creek proposal. EPA concludes from the record that construction of the Ware Creek proposal for local purposes would result in profound and avoidable adverse impacts to wildlife as other environmental factors.

Review of the Recommended Determination and the administrative record confirms that construction of the proposed reservoir in Ware Creek would result in the loss of an area that, from a site-specific and regional standpoint, provides important wildlife habitat as well as environmental contributions to the York River and the Chesapeake Bay. The project would result in a severe direct and cumulative loss of wildlife habitat and would result in serious impacts to and/or losses of involved wildlife species. In addition, the record reveals that there are practicable, less environmentally damaging alternatives that are available to James City County that would provide sufficient water supplies for its

projected local needs. EPA therefore concludes that construction of the proposed Ware Creek impoundment would result in unacceptable adverse effects to wildlife. This Final Determination modifies the Regional Recommended Determination and restricts the designation of the subject waters of the United States as a discharge site for dredged or fill material. EPA's Section 404(c) action is based upon the adverse impacts associated with James City County's construction of a dam and reservoir for its local water supply and as such prohibits the placement of fill for that purpose. This Final Determination does not pertain to other types of filling activities or to proposed filling activities in other waters of the United States within the Ware Creek watershed. Other proposals involving the discharge of dredged or fill material in the waters of the U.S. at issue will be evaluated on their merits within the Corps of Engineers' Section 404 regulatory program.

/s/ Rebecca W. Hanmer — 10 July 1989

Rebecca W. Hanmer — Date
Acting Assistant Administrator
for Water

APPENDIX E

IN THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF VIRGINIA

Newport News Division

JAMES CITY COUNTY, VIRGINIA,

Plaintiff,

v.

CIVIL ACTION NO. 89-1156-NN

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY AND UNITED STATES ARMY CORPS OF ENGINEERS,

Defendants.

MEMORANDUM OPINION AND ORDER

Plaintiff James City County ("County") brought suit against defendants, United States Environmental Protection Agency ("EPA") and United States Army Corps of Engineers ("Corps") after the EPA, acting under Section 404(c) of the Federal Water Pollution Control Act of 1972, vetoed the Corps' decision to permit the placement of dirt fill to construct a dam for the proposed Ware Creek Reservoir. Both plaintiff and defendants moved for summary judgment. Thereafter, the entire administrative record was submitted to this Court. The Southern Environmental Law Center, the National Wildlife Federation, the Virginia Wildlife Federation and the Chesapeake Bay Foundation participated in this action as amici curiae.

I.

James City County, adjacent to Williamsburg, Virginia, located on the York-James Peninsula, is the second fastest-grow-

ing county in Virginia. Currently, it receives its supply of water from two separate water systems. The James City County System provides the County with 1.9 million gallons of water per day, predominantly derived from groundwater. The City of Newport News System supplies the County with 5.4 million gallons of water per day. At its peak, the Newport News System could supply James City County with 7.7 million gallons of water per day.

Beginning in 1979, consultants alerted James City County that severe water shortages were inevitable if the County did not take action to meet its growing water supply needs. Numerous water studies were conducted, and, as a result, a figure of 18.2 million gallons per day was determined to be necessary to fulfill the County's water needs through the year 2030. Thus, James City County found itself faced with the unenviable task of finding a reliable, practical way to meet a 10.5 million gallon per day water deficit.

Further water studies ensued--at least sixteen water supply studies were conducted by federal, state and private authorities over a ten year period. Based on the aforementioned studies, James City County and the Corps concluded that constructing a reservoir on Ware Creek was the only practical long term solution. The proposed reservoir would be situated along the border of James City and New Kent Counties, approximately one thousand feet downstream from the confluence of Ware Creek and France Swamp. Capacity of the reservoir would be over six thousand million gallons at a normal pool elevation of thirty-five feet. Most importantly, the project would provide a safe yield of 9.4 million gallons of water per day.

Between 1982 and 1984, James City County laid the groundwork for obtaining a permit to place fill for the Ware Creek Reservoir. Under the Federal Water Pollution Control Act of 1972, such a permit is required from the Corps before any fill material is discharged into navigable waters.[1] In preparation for

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[1] Federal Water Pollution Control Act of 1971, 33 U.S.C. § 1344

its permit, the County purchased land in the area to forestall residual development and created a Reservoir Protection Overlay District to restrict incompatible land uses in the watershed. In addition, James City County obtained the consent of neighboring New Kent County to use a portion of New Kent County's property for the reservoir.

In 1984, the groundwork set, James City County formally filed an application with the Corps for a fill permit. Pursuant to the National Environmental Policy Act, the Corps directed an extensive review of the Ware Creek Reservoir project.[2] The Corps then solicited EPA's assistance as a "cooperating agency" in preparing a Final Environmental Impact Statement for the project. In the meantime, James City County hired numerous experts at considerable county expense to ensure that any issues raised by EPA could be addressed.

The Corps published its Final Environmental Impact Statement in October of 1987. The Corps' statement had taken an additional two years on account of EPA's exhortations that further investigations be done. EPA's contribution to the statement, nonetheless, was a scant two and a half pages of commentary, the crux of which was EPA's contention that the Commonwealth of Virginia was not doing enough to encourage regional as opposed to local water supply development.[3]

Representatives from James City County, sensing a growing rift between the Corps and EPA over the project, approached the EPA with several mitigation plans. The County representatives hoped that a suitable plan would perhaps lead to a compromise upon which both EPA and the Corps could agree. EPA's response to James City County's overtures was that the proposed placement of fill was simply "unmitigatable".[4]

On July 11, 1988 the Corps announced its decision that James

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[2] National Environmental Policy Act, 42 U.S.C. § 4321 et seq.

[3] Administrative Record, B-22.

[4] Complaint para. 48, Answer para. 48.

City County should be granted a permit to place fill in Ware Creek. In its Record of Decision, the Corps found that no agency, including EPA, had identified any practicable, environmentally preferable alternatives for meeting James City County's desperate need for water.[5] Moreover, the Corps found that James City County had taken all the appropriate steps to minimize any adverse effects of the project.[6]

Notwithstanding the Corps favorable findings, James City County, with the assistance of such agencies as the Fish and Wildlife Service, continued to work on a new, more extensive mitigation plan. In August of 1988, the County formally submitted a plan which included a 1.15 million dollar fund to preserve thousands of acres of top priority wetlands. James City County asked the Corps to integrate this plan into any final permit.

Nevertheless, after ten years of supposed cooperation, dozens of experts, countless water studies and a bevy of mitigation proposals, the EPA, on November 18, 1988, vetoed the Corps' overwhelming ratification of the proposed placement of fill. As a result, the Corps was estopped from granting James City County the permit to which the Corps held the County was entitled.

II.

A. EPA Incorrectly Presumed That James City County Had Alternatives Available To The Ware Creek Reservoir.

Under Section 404(a) of the Clean Water Act (the "Act"), 33 U.S.C. § 1344 (1982), the Secretary of the Army, acting through the Corps, is authorized to issue permits for the discharge of dredged or fill material into navigable waters at specified disposal sites. In determining whether to issue permits, the Corps is directed in Section 404(b) of the Act to apply the guidelines devel-

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[5] Record of Decision, Administrative Record A-54 at 5.

[6] 404 (b)(1) Analysis, Administrative Record, A-54 at 8.

oped by the EPA. 33 U.S.C. § 1344(b) (Supp. III, 1985). These guidelines appear as 40 C.F.R. part 230 (1987).

Once the Corps has set forth its intention to issue a particular permit, the EPA is empowered to veto said permit. Pursuant to Section 404(c) of the Act, if the EPA finds that the discharge of the fill material into the specified site will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas, wildlife, or recreational areas, the EPA may prohibit the discharge. 33 U.S.C. § 1344(c). The EPA is charged with consulting the guidelines expressed in 40 C.F.R. Part 231 (1987).

"Unacceptable adverse effect" is defined in 40 C.F.R. § 231.2(e) as:

> ...impact on an aquatic or wetland ecosystem which is likely to result in significant degradation of municipal water supplies (including surface or groundwater) or significant loss of or damage to fisheries shellfishing, or wildlife habitat or recreation areas.

The regulation goes on to say that in evaluating the unacceptability of such impacts, the EPA should consider the relevant portions of the Section 404(b) (1) guidelines. The Section 404(b)(1) guidelines direct the considering authority to examine practicable alternatives to the proposed discharge. See 40 C.F.R. § 230.5(c). According to section 230.10(a) (2) of the 404(b) (1) guidelines, an alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

In concluding that the Ware Creek Reservoir will have an unacceptable adverse effect, EPA based its finding on the fact that "there are practicable, less environmentally damaging alternatives that are available to James City County for the purpose of providing a water supply to meet the projected need for the

County".[7] However, EPA's findings do not support EPA's absolute conclusion that there are practicable alternatives available to James City County.

While EPA did present several possible alternatives in its Final Determination, EPA never stated that any of these alternatives could actually be implemented by James City County. For instance, in discussing the possibility of a three-dam project, and a greater reliance on groundwater, EPA merely said that there was "insufficient information" in the record to show that those alternatives were not available.[8] Concluding, as EPA did, that those alternatives could not be disproved is certainly not the same as stating that there are alternatives currently available. In other words, EPA employed a presumption that available alternatives did exist.

EPA argues that such a presumption is permissible under the Section 404(b) (1) guidelines. Yet, the Section 404(b) (1) guidelines expressly revoke any presumption in this case. The Section 404(b) (1) guidelines state that:

> (3)Where the activity associated with a discharge which is proposed for a special aquatic site (as defined in Subpart E) does not require access or proximity to or siting within the special aquatic site in question to fulfill its basic purpose (i.e. is not "water dependent"), practicable alternatives that do not involve special aquatic sites are presumed to be available, unless clearly demonstrated otherwise. In addition, where a discharge is proposed for a special aquatic site, all practicable alternatives to the proposed discharge which do not involve a discharge into a special aquatic site are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise.[9]

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[7] Final Determination, A.R. L-40 at 4.

[8] Final Determination, L-40 at 56-57, 59, 60, 61, 62.

[9] 40 C.F.R. Part 230.10(a) (3).

Here, "the activity associated--with a discharge"--construction of a reservoir-- must be located in wetlands to fulfill its basic purpose of impounding a stream. Thus, as EPA may have overlooked, a reservoir is considered to be a water dependent activity. As a result, there is no presumption that practicable alternatives that do not involve special aquatic sites are available. Furthermore, EPA's pet alternative, the three dam project, does entail a discharge into a special aquatic site. Consequently, there is no presumption that the three dam project would have less adverse impact.

EPA's duty in policing the discharge of fill material is clearly set forth in Section 404(c). The statute asserts that the EPA must show that the discharge of fill material will have an unacceptable adverse effect on the wetlands site. As noted, EPA premised its prohibition of the discharge for the Ware Creek Reservoir on the fact that James City County did have other alternatives. But, EPA has yet to demonstrate that James City County does have alternatives available, only that James City County may have available alternatives. Thus, EPA has not met its statutory duty of showing that the discharge necessary for the Ware Creek Reservoir will have an unacceptable adverse effect.

B. Notwithstanding EPA's Incorrect Presumptions, The Alternatives Cited By EPA Are Not Available.

In its Final Determination, EPA summoned several alternatives which EPA asserted could serve as a substitute for the Ware Creek Reservoir in relieving James City County's water woes. Specifically, EPA mentioned a three dam project and increased groundwater production, perhaps used in combination, as the most promising alternatives.

The three dam project involves the construction of three small ponds in three branches of the Ware Creek watershed. Ware Creek lies on the border of James City County and New Kent County. Consequently, construction of the three dam project would not be possible without the permission of New

Kent County. New Kent County, nevertheless, unequivocally opposes the three dam project. Moreover, New Kent County is not the only institutional obstacle confronting the three dam project. The EPA itself has stated that it would oppose such a project on the grounds that no water supply impoundment should be permitted on Ware Creek.[10] For EPA to advance the three-dam project as an acceptable alternative where EPA itself has already opposed that project is pure nonsense.

In addition, it is worth pointing out that even if EPA and New Kent County had agreed to the three dam project, the three dam project would be less practical and arguably more environmentally hazardous than the Ware Creek Reservoir. The Ware Creek Reservoir would be equipped to yield 9.4 million gallons of water. The three dam project would yield only 6.1 million gallons of water, leaving James City County far short of its water needs. Furthermore, the Ware Creek Reservoir yield could be expanded as the County's water needs grew without affecting additional wetlands. The yield from the three dam project, alternatively, would be fixed. Finally, as to cost, water from the three dam project would cost fifty percent more per gallon than water from the Ware Creek Reservoir.

Turning to EPA's groundwater alternative, this alternative is as implausible as the three dam project. Following a decade long study of the groundwater supply on the Lower Peninsula, the United States Geological Survey concluded that the use of groundwater by James City County must be minimized. In response to this alarming study, the State Water Control Board prohibited any further municipal water supply withdrawals in the James City County area. Hence, as the EPA was well aware, James City County by state prohibition could not even consider groundwater options.[11] For EPA to suggest further groundwa-

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[10] Recommended Determination, A.R. B-72 at 46.

[11] Obviously, if the three dam project and increased groundwater use are not available to James City County as separate entities, there is no alternative of using them in combination.

ter withdrawal (wells), which it knows is prohibited by law, is also nonsense.

Other relevant alternatives suggested by the EPA were desalinization of brackish water and conservation. Desalinization, labelled by the Virginia Health Department as a "premature technology", is both logistically and fiscally prohibitive.[12] Moreover, it is clear that conservation, while a laudable concept, certainly could not meet the increasing water needs of a county with an already unreliable water supply.

In sum, even if EPA's application of a presumption that there were alternatives to the Ware Creek Reservoir was proper, the record undoubtedly proves that no practicable alternatives are in fact available to James City County. As this County is in desperate need of a reliable water supply, the Ware Creek Reservoir must be authorized. Therefore, the Court finds that the Section 404(c) veto by the EPA was improper.

The Court hereby ORDERS that the Army Corps of Engineers issue a permit to place fill to James City County for the Ware Creek Reservoir.

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United States District Judge

Norfolk, Virginia
November 6th, 1990

[12] Administrative Record, E-14.

APPENDIX F

PUBLISHED

UNITED STATES COURT OF APPEALS
FOR THE FOURTH CIRCUIT

No. 91-2612

JAMES CITY COUNTY, VIRGINIA,
Plaintiff-Appellee,

v.

UNITED STATES ENVIRONMENTAL PROTECITON AGENCY;
UNITED STATES ARMY CORPS OF ENGINEERS,
Defendants-Appellants,

SOUTHERN ENVIRONMENTAL LAW
CENTER; VIRGINIA WILDLIFE FEDERATION;
NATIONAL WILDLIFE FEDERATION;
CHESAPEAKE BAY FOUNDATION;
Amici Curiae.

Appeal from the United States District Court
for the Eastern District of Virginia, at Newport News.
John A. MacKenzie, Senior District Judge.

(CA-89-156-NN)

Argued: October 1, 1991

Decided: January 29, 1992

Before SPROUSE, Circuit Judge, SPENCER, United States District Judge for the Eastern District of Virginia, sitting by designation, and HERLONG, United States District Judge for the District of South Carolina, sitting by designation.

Affirmed in part and remanded by published opinion. Judge Sprouse wrote the opinion, in which Judge Spencer and Judge Herlong joined.

COUNSEL

ARGUED: Martin William Matzen, UNITED STATES DEPARTMENT OF JUSTICE, Washington, D.C., for Appellants. William B. Ellis, MCSWEENEY, BURTCH & CRUMP, P.C., Richmond, Virginia, for Appellee. **ON BRIEF:** Richard B. Stewart, Assistant Attorney General, Peter W. Colby, Edward J. Shawaker, UNITED STATES DEPARTMENT OF JUSTICE, Washington, D.C.; Henry E. Hudson, United States Attorney, Susan L. Watt, Assistant United States Attorney, Norfolk, Virginia; Caroline Wehling, Office of General Counsel, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, Washington, D.C., for Appellants. Michael V. Hernandez, MCSWEENEY, BURTCH & CRUMP, P.C., Richmond, Virginia; Frank M. Morton, III, County Attorney, JAMES CITY COUNTY, Williamsburg, Virginia, for Appellee. William A. Butler, Patricia Ross McCubbin, Angus E. Crane, James W. Rubin, DICKSTEIN, SHAPIRO & MORIN, Washington, D.C.; Roy Hoagland, Ann Powers, CHESAPEAKE BAY FOUNDATION, INC., Richmond, Virginia; David W. Carr, Jr., SOUTHERN ENVIRONMENTAL LAW CENTER, Charlottesville, Virginia; David W. Carr, Jr., Jan Goldman-Carter, VIRGINIA WILDLIFE FEDERATION, Virginia Beach, Virginia; David W. Carr, Jr., Jan Goldman-Carter, NATIONAL WILDLIFE FEDERATION, Washington, D.C. for Amici Curiae.

OPINION

SPROUSE, Circuit Judge:

We review a judgment of the district court overturning a determination by the Environmental Protection Agency (the "EPA") pursuant to section 404(c) of the Clean Water Act, 33 U.S.C. §§1251 *et seq.* The EPA vetoed a decision by the Army Corps of Engineers which would have permitted James City County, Virginia, to build a dam and construct a water reservoir on Ware

Creek. We hold that the district court properly overturned the EPA's veto, but erred in failing to remand the case to the EPA for further proceedings.

I

James City County lies next to the City of Williamsburg on the York-James Peninsula. Although the County contains no large cities, it is the second fastest growing county in Virginia and has many summer visitors. In 1981, the County had approximately 24,000 residents. By 1987, the County's population had grown to approximately 31,000 residents. Projections indicate that, by the year 2030, the County's population will grow to over 50,000.

The County's current population consumes 9.3 million gallons of water per day ("mgd") provided from three sources. The City of Newport News sells 5.4 mgd to residents in part of the County, groundwater wells within the County provide 3.6 mgd, and the remaining 0.3 mgd is purchased from the City of Williamsburg. The EPA, the Corps, and the County have accepted that, based on the County's projected future population, the County's water requirements for the year 2030 will be 18.2 mgd.

Several factors limit the County's ability to satisfy its increasing need for water with its current sources. Williamsburg refuses to supply water to the County after 1999. In addition, Newport News will not expand delivery beyond 7.7 mgd. The County also claims that its supply of groundwater is unreliable. It contends that levels of groundwater are falling, that the County's groundwater contains impurities in violation of the EPA standards under the Federal Safe Drinking Water Act, and that the groundwater has been called "adverse to public health, welfare, and safety" by the Virginia State Water Control Board (the "SWCB"). The County therefore contends that it must develop a new source of water which could supply 10.5 mgd, the amount of the County's projected demand in excess of the 7.7 mgd New-

port News would supply.

After various water supply studies by federal, state, and private organizations, the County decided that the best way to meet the projected excess demand was to construct a reservoir by building a dam in Ware Creek. The resulting lake would extend into adjacent New Kent County, flooding 425 acres of wetlands, and would reliably yield approximately 9.4 mgd of water. This reservoir could also be connected to the Newport News water system. Because of the steep topography of the proposed reservoir site, connection with Newport News could double the reservoir's yield without inundating additional wetlands.

Before construction of the reservoir could begin, however, the County was required to first obtain a permit to place fill for the dam. See 33 U.S.C. § 1311(a). As developed in greater detail below, the Clean Water Act gives the Army Corps of Engineers primary responsibility for evaluating the County's application and issuing the appropriate permit, see Clean Water Act § 404(a), 33 U.S.C. § 1344(a), although the Act also authorizes the EPA to veto the Corps' decision under certain circumstances. See Clean Water Act § 404(c), 33 U.S.C. § 1344(c).

In 1984, the County formally applied to the Corps for a permit to place fill to construct the dam. The Corps, the United States Fish and Wildlife Service, the National Marine Fisheries Service, and the EPA jointly completed an Environmental Impact Statement in September 1987, and the Corps subsequently issued a notice of intent to issue the permit on July 11, 1988. The EPA's Regional Administrator then reviewed the Corps' decision.[1] After further hearings, comments, and consultations with the Corps, the Regional Administrator recommended on February 17, 1989, that the EPA veto the Corp's decision. This recommendation was

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1 For procedures established and followed by EPA in making its section 404(c) determinations, *See* 40 C.F.R. § 231.

referred to the national EPA Administrator in Washington, D.C., where, on July 10, 1989, the EPA's Assistant Administrator for Water issued the EPA's Final Determination, vetoing the Corps' decision to issue the permit.

The County then filed suit against the EPA and the Corps in the Eastern District of Virginia, challenging the EPA's veto. On November 6, 1990, the district court granted summary judgment to the County. The court overturned the EPA's veto, ordered the Corps to issue the permit, and denied the EPA's request for a remand to the EPA for further proceedings. The EPA subsequently filed this appeal.

The complex statutory and regulatory scheme involved here requires some preliminary discussion. Section 404(a) of the Clean Water Act gives the Army Corps of Engineers primary responsibility for issuing the permit required by the County. It states that "The Secretary [of the Army, acting through the Corps of Engineers,] may issue permits, after notice and opportunity for public hearings[,] for the discharge of dredged or fill material into the navigable waters at specified disposal sites." 33 U.S.C. § 1344(a).

While the Clean Water Act contains no particular provision detailing the standards to be used by the Corps in determining whether to issue a permit, it contains instructions for the Corps to follow in "specifying" sites where dredged or fill material may be placed. Section 404(b) of the Clean Water Act states:

> Subject to subsection (c) of this section, each such disposal site shall be specified for each such permit by the Secretary
>
> > (1) through the application of guidelines developed by the Administrator, in conjunction with the Secretary, which guidelines shall be based upon criteria comparable to the criteria applicable to the territorial seas, the contiguous zone, and

the ocean under section 1343(c) of this title....

33 U.S.C. § 1344(b).

Pursuant to this mandate, the EPA and the Corps have jointly issued guidelines to be followed by both agencies in making their respective determinations under section 404. *See* 40 C.F.R. § 230 (1991). These guidelines state that a permit should not be issued if: (1) practicable, environmentally superior alternatives are available, (2) the discharge would result in a violation of various environmental laws, (3) the discharge would result in significant degradation to the waters of the United States, or (4) appropriate and practicable steps have not been taken to minimize potential adverse impacts of the proposed discharge. 40 C.F.R. § 230.10(a) - (d).

In deciding to issue the permit, the Corps found that the project did not violate any of these provisions. It found specifically that there were no practicable, environmentally superior alternatives to the Ware Creek Reservoir. It also found that the proposed reservoir would not cause or contribute to violations of water quality or toxic effluent standards, that it would not affect any threatened or endangered species or marine sanctuaries, that the project would not cause or contribute to significant degradation of waters of the United States, and that the County had made all appropriate and practicable efforts to minimize potential adverse effects.

As noted above, however, approval by the Corps is not the end of the permit process. Section 404(c) of the statute authorizes the EPA to veto a Corps' decision to issue a permit when the EPA Administrator "determines, after notice and opportunity for public hearings, that the discharge of such materials into such area *will have an unacceptable adverse effect* on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas." 33 U.S.C.§ 1344(c) (emphasis added). It requires the Administrator to con-

sult with the Corps before making a final determination and to "set forth in writing and make public his findings and his reasons for making any determination under this subsection." *Id.*

In the regulations the EPA has issued to govern its veto determinations, "unacceptable adverse effect" is defined as an "impact on an aquatic or wetland ecosystem which is likely to result in significant degradation of municipal water supplies (including surface or ground water) or significant loss of or damage to fisheries, shellfishing, or wildlife habitat or recreation areas." 40 C.F.R. § 231.2(e). This regulation also provides that, "In evaluating the unacceptability of such impacts, consideration should be given to the relevant portions of the section 404(b)(1) guidelines...." *Id.*

The Regional Administrator conducts the first step in the EPA veto process. After the Corps published its notice of intent to issue the permit, the Regional Administrator in this case issued a Proposed Determination which would veto the Corps' decision. After holding a hearing, the Regional Administrator issued a Recommended Determination that the EPA veto the Corps' decision. The decision included findings that viable alternative water supplies were available to the County. These alternatives included a possible pipeline to the County from the James River, conservation, use of additional groundwater (including desalinized groundwater), and the construction of three smaller dams on a different site on Ware Creek.[2]

The Recommended Determination was then referred to the national EPA Administrator, who delegated his final

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2 The Recommended Determination equivocated with regard to the three dam alternative. It stated that "[w]e believe that this option continues to present serious environmental consequences. However, in the context of impact minimization[,] the three dam option should have received more attention."

decisionmaking authority to the Assistant Administrator for Water. On July 10, 1989, the Assistant Administrator for Water issued the EPA's Final Determination to veto the permit. In deciding to veto the Corps' decision, the Final Determination found that the proposed Ware Creek Reservoir

> would result in a severe direct and cumulative loss of wildlife habitat and would result in serious impacts to and/or losses of involved wildlife species. In addition, the record reveals that there are practicable, less environmentally damaging alternatives that are available to James City County that would provide sufficient water supplies for its projected local needs. EPA therefore concludes that construction of the proposed Ware Creek impoundment would result in unacceptable adverse effects to wildlife.

Like the Regional Administrator's Recommended Determination, the Final Determination included findings that alternative sources of water were available to the County. Although the Final Determination rejected the James River pipeline as an alternative, it endorsed the three dam project, groundwater, desalinization, and conservation as alternative sources of water for the County.

In contrast to the Recommended Determination, the Final Determination explicitly stated that the three dam project was a viable alternative water source for the County. It also concluded that groundwater could supply an amount between current production of 3.6 mgd and 9.4 mgd, although it noted that, if the SWCB limited use of groundwater, such a decision would preclude consideration of groundwater as an alternative. The EPA also concluded that there was insufficient evidence in the record to exclude desalinization as an option, and adopted a section of the Recommended Determination which mentioned favorably a Southern Environmental Law Center claim that conservation could reduce the County's demand for water by eighteen to

twenty percent. Finally, the Assistant Administrator emphasized the possibility of meeting the County's water requirements through a combination of alternatives or through a regional solution.[3]

After the EPA issued its Final Determination, the County brought this action in the district court under 5 U.S.C. § 702, as well as 28 U.S.C. §§ 1331 and 2201, seeking to overturn the EPA's action. The district court granted summary judgment to the County, finding that the County had no practicable alternatives to the construction of the Ware Creek Reservoir and that the EPA had incorrectly presumed that alternatives existed. After holding that the EPA's veto was improper, the district court ordered the Corps to issue the permit and rejected the EPA's veto was improper, the district court ordered the Corps to issue the permit and rejected the EPA's request for a remand.

II

While the EPA does not abandon its challenge to the district court's finding that the County had no practicable alternatives to the construction of the dam, its primary claim on appeal is that the district court should have remanded the case to the EPA in order to provide the EPA with an opportunity to consider whether the project's environmental effects alone justified a veto. The EPA also requests an opportunity to reassess whether prac-

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[3] Although the EPA vetoed the permit, the Final Determination only vetoed the project as a local water supply souce. The EPA apparently reserved the right to permit the reservoir as a regional water source.

ticable alternatives are available.[4] In response, the County argues that this case should not be remanded to the EPA. It maintains that practicable alternatives are unavailable and that the EPA has already refused to veto the project on environmental effects alone. The County argues in the alternative that the EPA has waived its right to another veto determination.

We first consider whether the district court properly concluded that there were no practicable alternatives to the proposed reservoir. We find no error in that decision of the district court. However, because we do not believe that the EPA has in fact decided not to veto the permit even in the absence of practicable alternatives, we find that the district court should have remanded this issue to the EPA for its further consideration.

A

In our review of the district court's conclusion that there were no practicable alternatives, we are guided by the same standards that controlled the district court's evaluation of the EPA's Final Determination. The Administrative Procedures Act provides that when a court reviews an administrative agency's action on the record of a hearing provided by statute, that action can only be set aside if it is "unsupported by substantial evidence." 5 U.S.C.

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[4] By contrast, the Southern Environmental Law Center, the National Wildlife Federation, the Virginia Wildlife Federation, and the Chesapeake Bay Foundation, filing a brief as amici curiae, asked this court to reverse the district court and affirm EPA's decision, either because EPA correctly concluded that practicable alternatives exist, or because EPA has already held that the adverse environmental effects alone were sufficient to justify a veto. Our focus, of course, is on the relief requested by EPA, not the amici. We note, however, that our reasoning obviously rejects these arguments.

706(2)(E).[5] Since, in our view, the EPA's finding that the County had practicable alternative water sources was not supported by substantial evidence, we affirm the district court's holding in this respect.

The guideline regarding alternatives states:

> Except as provided under section 404(b)(2), no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences.

40 C.F.R. § 230.10(a). The regulation provides further that "An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." 40 C.F.R. § 230.10(a)(2).

The three dam project is the primary alternative suggested by the EPA in its Final Determination. As the EPA recognized, however, part of the three dam project would be built in New Kent County. The record demonstrates that New Kent County

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[5] In our view, this is the proper standard of review for the EPA's section 404(c) determination, in light of the statutory requirements of notice and opportunity for public hearings, as well as the requirement that "The Administrator shall set forth in writing and make public his findings and his reasons for making any determination under this subsection." 33 U.S.C. § 1344(c). *But see Bersani v. Robichaud*, 850 F.2d 36, 46 (2dCir. 1988), *cert. denied*, 489 U.S. 1089 (1989) (reviewing a section 404(c) veto decision by the EPA under the arbitrary and capricious standard). Even were we to review EPA's action under the "arbitrary and capricious" standard, however, we would reach the same conclusions that we reach herein.

categorically opposes the project and will not consent to its construction. Moreover, the three dam project also requires a section 404 permit, but the EPA did not find that the County could obtain a permit for the project. In fact, various statements by the EPA in the record indicate that the EPA itself would likely veto a permit for the three dam project. Finally, water from the three dam project would cost fifty percent more than water from the proposed reservoir. We are persuaded, therefore, that the three dam project is not a practicable alternative for the County.

Nor is groundwater a practicable alternative. In the Final Determination, the EPA itself recognized that groundwater would not be a practicable alternative if further groundwater withdrawals were prohibited by the SWCB. The SWCB has in fact prohibited further groundwater withdrawals in response to a study by the United States Geological Survey.

We also believe the EPA erred by including desalinization as a viable alternative. Desalinization, briefly mentioned in the Final Determination, is still experimental. This technique also has adverse environmental effects--the County would have to dispose of the salt removed from the water. There is simply no evidence that desalinization could provide a substantial and reliable source of water for the County.

Conservation, of course, may be considered in determining the County's water supply needs. However, accepting *arguendo* the Southern Environmental Law Center's largest estimate--that conservation would decrease the County's demand for water by twenty percent--a substantial water supply deficit would remain.

Despite uncontroverted evidence to the contrary, the EPA found that the County had practicable water supply alternatives. We conclude that, giving the appropriate deference to the agency, there was not substantial evidence to support the EPA's conclusion that the County had practicable alternatives.[6] Since we

feel that the record makes this conclusion unavoidable, on remand the EPA will not be permitted to revisit this issue.

B

The County concedes, as it must, that remands are generally appropriate when a court finds that the stated basis for an agency's action is inadequate. *See Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council*, 435 U.S. 519, 524-25 (1978). It argues, however, that a remand is not appropriate in this case for several reasons.

First, it claims that the Recommended Determination essentially suggested to the national office that the EPA veto the project based on adverse effects alone. It argues further that EPA's treatment of the Recommended Determination--modifying it so as to veto based on the availability of alternatives--amounted to a finding that the adverse environmental effects of the project alone did not justify a veto. We disagree. Both the Recommended and the Final Determinations found that practicable alternatives were available. The Recommended Determination simply stated that the permit should be vetoed because of "unacceptable adverse effects," merely repeating the holding required by statute to justify a veto. We do not read the Recom-

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[6] The district court concluded that EPA had relied upon a presumption that practicable alternatives exist because of a mistaken belief that the proposed reservoir would "not require access or proximity to or siting within the special aquatic site in question to fulfill its basic purpose (i.e., is not 'water dependent')...." 40 C.F.R. § 230.10(a)(3). After reviewing the EPA's Final Determination, we are not persuaded that EPA applied the presumption in this case. While parts of the Final Determination seem to require the County to prove that alternatives are not available, EPA makes its findings without explicitly invoking the presumtion. Moreover, like the district court, we are persuaded that this project is water dependent, and conclude that the presumption does not apply.

mended Determination to suggest that the EPA should veto even in the absence of practicable alternatives. In our view, the EPA has not yet ruled that considerations of environmental effects would alone justify a veto. It should have that opportunity.

The County also contends that the EPA's veto rights under the statute provide merely a single "opportunity" to veto, which, when exercised improperly, is waived. While theoretically Congress could create a scheme providing an agency with only one opportunity to make such a determination, we do not discern a congressional intent to implant that radical procedure in section 404(c). Accordingly, we reject the argument that the EPA has waived its right to veto the permit based on adverse effects alone.

Finally, the County argues that the EPA's delay in acting, as well as the prejudice the County will suffer as a result of a remand and further delay, justify the decision of the district court not to remand. We recognize that when Congress enacted section 404, it was concerned about the possibility of harmful delays in permit and veto decisions. See 118 Cong. Rec. 533699 (remarks of Sen. Muskie) ("The Conferees expect the Administrator to be expeditious in his determinations as to whether a site is acceptable...."). In this context, our decision to remand was heavily influenced by the unequivocal representation of the EPA's counsel at oral argument that the EPA could complete its determination on remand within sixty days of our decision. We would view seriously any failure to comply with that representation.

In view of the above, the judgment of the district court is affirmed in part. The case is, however, remanded to the district court for further remand to the EPA for action consistent with the views expressed in this opinion.

AFFIRMED IN PART AND REMANDED

APPENDIX G

FINAL DETERMINATION ON REMAND
OF THE
U.S. EVIRONMENTAL PROTECTION AGENCY'S
ASSISTANT ADMINISTRATOR FOR WATER
PURSUANT TO SECTION 404(c) OF THE CLEAN
WATER ACT CONCERNING THE PROPOSED
WARE CREEK WATER SUPPLY IMPOUNDMENT
JAMES CITY COUNTY, VIRGINIA
MARCH 27, 1992

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I. INTRODUCTION

A. STATUTORY AND REGULATORY BACKGROUND

Section 404(c) of the Clean Water Act (33 U.S.C. Section 1251 *et seq.*) provides that, if the Administrator of the U.S. Environmental Protection Agency (EPA) determines, after notice and opportunity for public comment, that unacceptable adverse effects on municipal water supplies, shellfish beds, fishery areas (including spawning and breeding areas), wildlife, or recreational areas would result from the discharge of dredged or fill material, he may exercise his authority to withdraw or prohibit the specification, or deny, restrict or withdraw the use for specification, of any defined area as a disposal site for dredged or fill material.

The procedures for implementation of Section 404(c) are set forth in the Code of Federal Regulations, 40 CFR Part 231. The major milestones in these procedures are: 1) the Regional Administrator's proposed decision to withdraw, deny, restrict or prohibit the use of a site (Proposed Determination); 2) the Regional Administrator's recommendation to the Administrator to withdraw, deny, restrict or prohibit the use of a site (Recommended Determination); and 3) the Administrator's final decision to affirm, modify, or rescind the Regional recommendation (Final Determination). The Administrator has delegated the authority to make final decisions under Section 404(c) to the Assistant Administrator for Water, who is EPA's national Clean Water Act Section 404 program manager.

This document concerns the proposed placement of dredged or fill material for the purpose of creating a local water supply impoundment on Ware Creek in the County of James City, Virginia. The impoundment would supply water to James City County residents. As described below, EPA's original Final Determination for this project was issued on July 10, 1989, and

remanded by the Fourth Circuit Court of Appeals on January 29, 1992. This decision reaffirms EPA's 1989 determination that the proposed James City County impoundment project would have unacceptable adverse effects on wildlife[1]. This determination concludes that considerations of environmental effects alone justify a Section 404(c) action to "veto" the proposed James City County water supply dam and reservoir. This determination thus withdraws the specification of the subject waters of the United States as described in the Department of the Army Section 404 permit number 84-0614-06 dated March 1, 1991, and restricts the disposal of dredged or fill material in the subject waters of the United States for the purpose of constructing the local water supply impoundment proposed by James City County.

B. PRIOR REGULATORY PROCEEDINGS

An impoundment on Ware Creek has been under consideration for some time. On May 12, 1981, in a letter to the Norfolk District of the Corps of Engineers (Corps), EPA Region III stated, "Destructive impacts to such a large area of the local wetland resource would be unacceptable. EPA would therefore strongly object to any water supply structure placed in this waterway." In 1984 James City County, Virginia, filed an application with the Norfolk District of the Corps for a Clean Water Act Section 404 permit to place dredged or fill material in Ware Creek for the construction of a local water supply impoundment. On September 30, 1985, EPA Regional III formally commented on the Corps Draft Environmental Impact Statement (EIS), detailing EPA concerns regarding adverse impacts of the proposal. EPA maintained its concerns regard-

[1] For the purposes of this Section 404(c) Determination, "effects on wildlife" include impacts to ecosystem integrity, nutrient pathways, and all other life requisites of animal, including fish, species.

ing the proposed project in comments on the Final EIS, stating that construction of the proposed James City County impoundment was environmentally unsatisfactory. In the formal comment letter on the Final EIS, EPA Region III stated that options to address Agency concerns, including actions under Clean Water Act Section 404(c), were being considered by EPA. On July 11, 1988, the Corps of Engineers issued a Notice of Intent to issue the Section 404 permit to the County. In its Clean Water Act Section 404(b)(1) analysis, the Corps found that, although the adverse environmental impacts from the project would be substantial, those impacts would be mitigated to a level to prevent significant degradation, and the lack of less damaging alternative water supplies justified the project.

On November 18, 1988, EPA Region III solicited comment on a Proposed Determination to prohibit, or deny the specification, or the use for specification of an area as a disposal site; Ware Creek, James City County, Virginia. In a letter dated January 30, 1989, the U.S. Fish and Wildlife Service responded to that proposal by stating, "During the course of our involvement, the Service and other agencies have documented that the Ware Creek watershed provides diverse and high quality habitat for fish and wildlife.... We consider this loss of wildlife habitat to be unacceptable because of its severity and the lack of adequate mitigation." There are no subsequent documents from the U.S. Fish and Wildlife Service in the administrative record.

On February 17, 1989, EPA Region III's Regional Administrator recommended that EPA prohibit the use of Ware Creek as a disposal site for dredged or fill material in connection with the construction of any water supply impoundment. The Regional Administrator based his recommendation upon his finding that the discharge of dredged or fill materials in connection with this project would have unacceptable adverse impacts

on wildlife, fishing areas and recreational areas.

Upon review of the administrative record for the Recommended Determination and the Corps' permit record, and after consultation with the County, EPA's Acting Assistant Administrator for Water issued a Final Determination on July 10, 1989. In that determination, EPA found that the proposed project would result in the loss of a diverse wetland and open water aquatic habitat providing critical ecological support to wildlife in Ware Creek, associated ecosystems and downstream aquatic systems, including Chesapeake Bay. EPA also found that the County had practicable, less environmentally damaging alternatives for meeting its water supply needs. Based on both of these findings, EPA restricted the designation of the proposed site for the purpose of constructing James City County's local water supply impoundment.

As directed by a District Court ruling described below, the Corps of Engineers, Norfolk District, on March 1, 1991, issued a Section 404 permit to James City County for construction of the water supply reservoir on Ware Creek and other such work as described in the September 1987 Final Environmental Impact Statement for this project. However, in the interim between the issuance of the permit and this determination, no discharge of dredge or fill material associated with construction of the proposed James City County impoundment has occurred.

C. JUDICIAL PROCEEDINGS

In September 1989, James City County filed a complaint in U.S. District Court for the Eastern District of Virginia asking that EPA's Final Determination be vacated and that the Corps be directed to issue the permit. The District Court granted the relief requested by the County on November 6, 1990, based on its finding that the County had, in fact, no practicable water

supply alternatives. *James City County, Virginia v. U.S. EPA*, Civil Action No. 89-156-NN (E.D. Va. November 6, 1990). The Court's ruling was based solely on the issue of the availability of alternative water supplies for the County and did not discuss EPA's finding of substantial adverse environmental impacts. In granting the relief sought by the County, the District Court did not remand the Final Determination to EPA for a decision on whether the adverse environmental impacts alone would justify the restriction of the site.

EPA appealed the relief granted by the District Court to the Fourth Circuit Court of Appeals. On January 29, 1992, the Court of Appeals reversed the District Court on the issue of relief and remanded the case for further remand to EPA. The Court stated that on remand EPA must determine whether the adverse environmental effects of the project would justify a restriction of the site for this project even if no practicable water supply were available to the County. Both the District Court and the Court of Appeals held that the record before the Agency in 1989 demonstrated that practicable water supply alternatives were not available to the County, and the Court of Appeals stated that EPA could not revisit this issue on remand. Finally, based on EPA's representation that a remand to review the Final Determination on the issue of impacts could be completed within about 60 days, the Court of Appeals stated that it would "view seriously" any failure by EPA to renew or withdraw its Final Determination for the project within that time period.

D. PROTOCOL FOR REVIEW

The Section 404(c) procedural regulations do not specify any process for reconsideration of Final Determinations. In addition, given the time constraints for EPA's reconsideration of the Final Determination and the limited scope of the reconsideration, EPA determined that conducting, once again, a full Section 404(c)

process would be neither possible nor necessary.

As a result of this determination, EPA's reconsideration of this case involved the following procedural steps. First, EPA undertook a reexamination of the administrative record upon which the July 10, 1989, Final Determination was based. To determine whether the adverse environmental effects of the proposed Ware Creek project would justify a restriction of the site even if no practicable water supply were available to the County, EPA reviewed only those documents or portions of documents which described either relevant environmental background conditions or the potential impacts of the dam and reservoir proposal, including the proposed mitigation offered by James City County during the 1989 Section 404(c) consultation. EPA then reviewed the 1989 Final Determination itself to determine whether the project description and discussion of project impacts were substantiated by the administrative record.

Second, on February 4, 1992, EPA Region III Regional Administrator Edwin Erickson wrote to Assistant Administrator for Water LaJuana Wilcher, renewing the Region's recommendation that the site be restricted based on the project's serious adverse environmental impacts.

Third, by letter dated February 25, 1991, the Agency offered James City County an opportunity to contribute any additional information to, or corrections of, the administrative record. By letter dated March 4, 1992, James City County declined EPA's invitation. EPA received a request to meet with the other litigants, the *amici*. On March 3, 1992, Assistant Administrator for Water LaJuana Wilcher and other EPA personnel met with representatives from the Chesapeake Bay Foundation and National Wildlife Federation to listen to their concerns regarding the remand decision. The Chesapeake Bay Foundation and National Wildlife Federation requested that the EPA reissue its veto of the proposed Ware Creek impound-

ment based on environmental impacts alone. A report of that meeting is contained in the administrative record for this decision. A meeting with EPA was requested by the County and Congressional representatives, but was then canceled at the request of James City County.

Finally, on March 16, 1992, Assistant Administrator LaJuana Wilcher and other EPA personnel toured the wetland and open water areas that would be directly affected by the Ware Creek impoundment project. Counsel for James City County and a representative of the land owner, the Chesapeake Corporation, as well as a representative of the U.S. Fish and Wildlife Service, accompanied EPA personnel on the tour. At the conclusion of the tour, EPA again requested that James City County provide any additional information or corrections to the administrative record for EPA's deliberations on the remand determination. The administrative record for this decision contains a report of this field visit. EPA did not receive information or corrections to the administrative record from James City County.

II. REVIEW OF THE ADMINISTRATIVE RECORD FOR THE 1989 FINAL DETERMINATION

A. ADDITIONAL INFORMATION

The primary discussion of relevant environmental background conditions and potential adverse impacts of the dam and reservoir proposal on aquatic and wetland ecosystems is presented in subsection B. of this Section. In addition, EPA's reevaluation of the administrative record revealed certain information that warranted additional discussion because it is of particular importance to EPA's decision on remand. This information is summarized below.

The primary adverse impact to wetlands and aquatic resources from the proposed dam and reservoir project would occur as a consequence of the loss of palustrine and estuarine wetlands in the Ware Creek/York River system and their replacement with lacustrine open water. The open water reservoir system would provide little, if any, usable habitat for a majority of the wildlife species that depend upon the present and vastly different Ware Creek aquatic ecosystem. The structural diversity and mosaic of wetland types interspersed with flowing stream channels provides significantly distinct and superior wildlife habitat than that provided by a reservoir system. Additionally, as a result of this proposal, additional wetlands and aquatic systems downstream would be impacted by reduced discharges of freshwater, sediment, nutrients and detrital material.

1. Values and Functions of Existing Ware Creek Wetlands and Aquatic Ecosystems

The administrative record confirms that the existing Ware Creek aquatic system provides valuable wildlife habitat and

critical life support to wildlife which depend upon the Ware Creek wetland and aquatic ecosystems, including but not limited to Wood Ducks, Black Ducks, Great Blue Herons, White Perch, Beaver, and River Otter. These wildlife are attracted to and supported by the plentiful food, cover, breeding, and spawning habitats provided by the Ware Creek aquatic environment.

Wood Ducks find nesting trees in the forested areas and a stable source of food in the wetland (especially herbaceous) vegetation and benthic invertebrates. These Wood Ducks also congregate in large communal roosts in Ware Creek wetlands in the fall. Black Ducks, a species which has undergone dramatic population declines in recent years, are attracted to the Ware Creek aquatic system by the ample foods of the freshwater marshes (including the highly favored Wild Rice) and areas of shallow water which provide important wintering habitat for this migratory species. The North American Waterfowl Management Plan has identified loss and degradation of habitat as a major waterfowl management problem in North America, and has indicated that Black Ducks and Wood Ducks (among others) thrive in unaltered, natural environments. The current Ware Creek system provides this needed aquatic habitat.

The Great Blue Heron, a species of special concern to the U.S. Fish and Wildlife Service, also thrives in natural habitats, preferentially nesting in riparian swamps such as the rookery in France Swamp. EPA believes that the dam and reservoir project as proposed would result in the loss of this rookery and would adversely affect the France Swamp Heron population. Movement of the Herons to other locations outside of the Ware Creek watershed would result in increased stress on Heron populations in other rookery areas.

Important fish species found in the Ware Creek system include the semi-anadromous White Perch, the catadromous

American Eel and important forage fish species. Anadromous fish (Alewife and Blueback Herring) have not been reported in Ware Creek. However, the administrative record indicates that, according to the National Marine Fisheries Service, the Ware Creek aquatic habitat is suitable for spawning of these species and that they probably use the Creek during periods of high freshwater flow and high population densities. Forage fish species are critical members of the fish fauna, providing a vital trophic link in the food web. The forage fish utilize the herbaceous wetlands for food, nursery and spawning grounds, as well as for shelter and protection from fish predators. The tidal freshwater wetlands are an important source of palatable detritus and forage plants, and also provide a valuable spawning and nursery area for many commercial and recreational fish species as well as forage fish species.

Existing wetlands and open water areas within the Ware Creek system serve as a source of food for resident aquatic mammal populations both directly, in the form of vegetative matter (roots, stems, etc.), and indirectly, as habitat for forage fish and invertebrates. Aquatic mammals in the Ware Creek system also utilize wetlands for living habitat. Aquatic mammal species within the Ware Creek system include commercially important furbearing animals, Beaver, Muskrat, and the relatively rare River Otter.

These, and other, wildlife values and functions of the Ware Creek aquatic system are based upon and depend upon its structural diversity and mosaic of wetland types and open water habitats. Each system sustains important wildlife food and habitat requirements. In addition to the superior habitat values, these systems are among the most productive systems with generally greater productivity than either inland or marine systems, due to their greater variability and diversity of associated plants and animals.

2. Projected Values and Functions of the Ware Creek System Subsequent to Dam Construction and Project Implementation

Lacustrine open water systems, such as the proposed reservoir, do not offer the range and variety of wildlife habitat values and functions currently supported by the Ware Creek wetland and open water aquatic systems. Reservoir systems provide limited or no habitat for the varied types and number of wildlife species that currently utilize and are adapted to the vegetated, multi-dimensional aquatic system found in Ware Creek. The deeper sections of reservoir systems offer little habitat for food or cover for even those fish species which would utilize the reservoir habitat. If the lake is steep-sided, as would be the case for the proposed Ware Creek reservoir, there is even less habitat for food or cover.

Whereas much of the primary productivity in palustrine and estuarine wetlands is from vascular plants, lacustrine primary productivity is from algae. These aquatic plants are virtually the only plant material living in deep water (>2 meters) areas of a lake. Algae, as phytoplankton, is a valuable source of food to some aquatic organisms. However, its use is limited and it is not directly utilized by the birds and mammals that feed or vascular vegetation.

3. Loss of Ecosystem Values and Functions That Would Result From the Ware Creek Project

From an ecosystem perspective, the largely monotypic habitat that would be provided by the reservoir would be substantially less diverse and productive when compared with the numerous different habitats provided by the Ware Creek system. The invertebrate fauna of the lake would be much less diverse that the existing variety of invertebrates. Amphibians requiring specific habitats for breeding and egg laying, with conditions such as flowing water of the appropriate velocity

and vegetation of a particular size, would suffer. Particularly because of the presence of predatory fish species, the lake would provide fewer successful breeding sites for amphibians than the existing varied system.

Dabbling ducks, such as the Black Duck, would also be negatively impacted by the reservoir. Their food sources would be mostly destroyed by the removal and flooding of vegetation such as Wild Rice, and the reduction in the invertebrate fauna. Dabbling ducks require shallow water habitats (<0.5 meters) to provide a source of food during overwintering.

The Great Blue Heron rookery would be impacted by flooding of the nesting trees, hastening the loss of these nesting trees. EPA believes that the Herons would have abandoned the France Swamp rookery prior to the loss of these trees, due to impoundment related construction disturbances and associated changes to their habitat. Given the Heron's habitat requirements, successful relocation of the Heron rookery, particularly in the area of the proposed reservoir, remains uncertain and it must be accepted that the rookery would probably be lost as a result of this project and that the overall vigor of the present France Swamp Heron population would be adversely affected.

Impacts to fish would be both upstream and downstream of the dam. Upstream, the lake would be stocked with gamefish which would out-compete some of the naturally occurring fish populations, thereby depleting and eventually removing them. Some species, not adapted to the lacustrine environment, would be eliminated totally. Loss of the open-system nature of the current Ware Creek aquatic system would adversely affect highly mobile or migratory species such as the American Eel and other important commercial species which spend a critical part of their life cycle in freshwater systems but are captured downstream or in Bay environments.

Virginia's coastal marshes comprise about 0.5 percent of the State's land mass, but 95 percent of the Bay and estuarine commercial and sport fishes in Virginia are dependent on these marshes. The loss of such marshes results in the loss of the nursery and feeding grounds for young fish. Many of these small fish species are forage species such as Tidewater Silversides, but others are the juveniles of commercially important species such as the Spot. The current Ware Creek wetland are aquatic system provides vital habitat to both of these groups of fishes and that important function would be lost under the proposed reservoir scenario.

As a result of the proposed project, the semi-anadromous White Perch would lose valuable spawning habitat as the dam would separate and block the estuarine Perch from freshwater spawning areas above the dam. Below the dam, the tidal freshwater areas would be destroyed by increased salinity as the freshwater inflow is reduced by filling of the reservoir and its operation. The White Perch is important as a forage fish and EPA believes that its decline in the Creek would adversely affect faunal populations at higher trophic levels. The National Marine Fisheries Service has not found acceptable fish ladders for use with White Perch, so the loss of spawning habitat in Ware Creek cannot be mitigated in this fashion.

The portion of Ware Creek below the dam would be dramatically affected by the proposed reservoir. Even considering seepage of freshwater through the dam, reduced freshwater discharge would allow a "salt wedge" to move up the Creek to the dam, completely eliminating the tidal freshwater wetlands and reducing the oligohaline (0.5 to 5.0 parts per thousand salinity) wetlands. If freshwater flows are reduced enough, the oligohaline marsh would also be eliminated. The change in vegetation and character from freshwater (and oligohaline) marsh to mesohaline (5.0 to 18.0 parts per thousand salinity) marsh is significant, bringing with it a different

assemblage of flora and fauna. This change would result in replacement of the existing faunal communities that are typified by plants such as Arrow Arum and Wild Rice that provide significant seeds and fruits consumed by resident and transitory wildlife. The reservoir would replace these communities with one of lesser diversity dominated by plant species which tend to be less palatable and which tend to degrade less easily and therefore tend to be less readily utilized in the associated aquatic ecosystems. The Virginia Institute of Marine Science stated that the loss of the tidal freshwater wetlands would "significantly weaken the overall ecological value of Ware Creek to the York River."

The loss of the Ware Creek system would add to the cumulative losses of palustrine and estuarine wetlands in Virginia and to cumulative impacts to the Chesapeake Bay. Creation of freshwater impoundments is an important factor, accounting for 25% of the palustrine vegetated wetlands lost in Virginia between the mid-1950s and late 1970s. The incremental loss of palustrine forest wetlands has cumulatively, had clearly detrimental effects on whole watersheds. Any project, regardless of its size, that causes these types of ecological changes adds to these cumulative effects.

Finally, while the administrative record indicates that the type, nature, and timing of the development proposed for the Ware Creek watershed, with or without the project, remains under development, it is clear that, because the property is primarily owned by a single entity and based on what is known from the administrative record about the plan for development of the area, proposed development of the upland of the Ware Creek watershed is likely to consist predominantly of planned residential, commercial and industrial development. EPA believes that the secondary impacts of this type of development on the wetlands and aquatic ecosystems of the Ware Creek watershed will be substantially less than those associated with the

James City County dam and reservoir as proposed. Furthermore, with regard to other proposals that would have direct impacts on the wetlands and aquatic ecosystems of the subject area as a result of distinct discharges of dredged or fill material, EPA notes that these areas are currently subject to regulation under Section 404 and conclusions that such discharges will result in the same adverse impact as the James City County proposal would be highly speculative at this time.

B. REVIEW OF THE 1989 FINAL DETERMINATION

As stated previously, the administrative record was reevaluated by EPA based upon the instructions contained in the remand by the Fourth Circuit. That reevaluation confirmed that the information presented in the 1989 Final Determination correctly reflected information contained in the administrative record. As such, statements in the 1989 Final Determination which reflect project-related effects remain relevant to the current decision before EPA. Therefore, those parts of the 1989 Final Determination that EPA has found to be relevant to the current decision are presented below, in the remainder of this Section, Section III., Adverse Impacts of the Proposed Project, and Section IV., Mitigation. In accordance with the Court's directives regarding this review, portions of the 1989 Final Determination that were not considered relevant and/or contained findings or conclusions concerning alternatives to the Ware Creek impoundment have been omitted; changes in the language of the 1989 document are indicated by brackets.

1. Site Description

a. Hydrology

The project site for the proposed Ware Creek impoundment lies within the coastal plain of the Tidewater region in southeastern Virginia. Ware Creek and associated tributaries,

France Swamp, Cow Swamp and Bird Swamp, drain a generally undisturbed watershed of approximately 18 square miles with a majority of the basin land cover currently in hardwood and mixed pine-hardwood forest. The proposed water supply impoundment dam site is situated approximately 1000 feet downstream of the confluence of Ware Creek and France Swamp and is located approximately 4.72 miles upstream of the mouth of Ware Creek where it empties into the York River. The proposed impoundment would be approximately 1217 acres in surface area. The Ware Creek system discharges into the western side of the York River and is approximately 23 river miles form the mouth of the York where the River empties into Chesapeake Bay.

As stated in the Corps Final Environmental Impact Statement (EIS), a majority of the Ware Creek drainage basin lies above the proposed dam site. While drainage from Bird Swamp is interrupted by a minor impoundment, Richardson's Millpond, flow from the remainder of the Ware Creek basin is unobstructed by man-made impoundments until the Creek empties into the York River. Research conducted by the Virginia Institute of Marine Science shows that Richardson's Millpond drains approximately 37 percent of the Ware Creek watershed area above the proposed impoundment. There are relatively few roads crossing the Creek and residential and industrial development is absent from the immediate vicinity of the proposed impoundment as well as edges of the Creek.

The geology of the Ware Creek watershed is characterized by well-drained soils and relatively steep-sloped topography. Because Ware Creek empties into a tidal brackish stretch of the Lower York River Basin, the system normally experiences a semidiurnal tidal flux which carries brackish waters well into the major creek channels. The relationship of the geomorphology of the Ware Creek drainage and the exchange between the freshwater portion to the Creek and the associated brackish

tidal system results in considerable variability in the natural parameters affecting the physical and chemical hydrology of Ware Creek. The administrative record indicates that while there is little reliable data regarding freshwater discharge of Ware Creek, the Creek exhibits significant fluctuations in freshwater flow. Although the average stream flow at the proposed dam site is estimated to be approximately 12.4 million gallons per day (mgd) or 19.2 cubic feet per second (cfs), the maximum figure for flow into the reservoir is estimated at 12, 485 cfs. The administrative record also indicates that the variable discharge of freshwater from the Creek and the Creek's depth relative to the estuarine tidal influx of the York River results in large scale fluctuations in the salinity of waters in the creek system over relatively short periods of time. Site measurements during long-term dry weather conditions indicate that short-term (tidal cycle) salinity variations can be up to 8 parts per thousand (ppt) and long-term variations differ by as much as 16 ppt.

Ware Creek's present hydraulic setting and environment sustains a broad variety of aquatic and wetland functions which are regarded as valuable environmental attributes of the Creek system. The fundamental asset of the current system is maintenance of relatively undisturbed, highly diverse wetland environments which accompany the dynamic physical and chemical interactions of pulsed freshwater flow and estuarine tidal flux. Further, the land use practices of the Ware Creek watershed and the lack of significant alterations to land adjacent to the Creek accommodate the maintenance of this system. In sum, these conditions play a substantial role in supporting the overall plant and animal species composition and richness of the Ware Creek watershed.

The geology and hydrology of the current Ware Creek basin, and particularly the hydrology of the Creek itself, serves to regulate the accumulation and transport of detrital material and manage nutrient flux through the vegetated wetland sys-

tem and into York River. In spite of the sediment and nutrient trapping effects of Richardson's Millpond, under the present hydrological regime for the remaining watershed which is not affected by Richardson's Millpond, dissolved inorganic materials dissolved organic matter and particulate organic matter are exported from the Ware Creek aquatic system and become part of the normal input of dissolved ant particulate matter transported by the York River into the Chesapeake Bay. EPA notes that exact quantitative measurement of the amount of material exported from the watershed is not feasible. In reviewing this component of the Ware Creek system EPA is relying upon the unquestionable transport and export of materials through and out the Creek's aquatic system.

b. Vegetation

[A] majority of the Ware Creek watershed is undeveloped and is characterized by upland areas dominated by hardwood and mixed pine-hardwood forest. The administrative record indicates that while approximately 67 percent of the watershed is forested, nearly 40 percent of the current forested area was previously managed as pine plantation. Agricultural, commercial and residential land use accounts for approximately 25 percent of the watershed area and the remaining 8 percent of the basin consists of wetlands and open waters.

The Recommended Determination and the administrative record indicate that tree species found in the Ware Creek basin include a range of mature (30-50 year old) species including oaks and hickories and that much of this community type is found on the upland side slopes of the basin. These forested upland tree species provide abundant mast crop and contribute structural diversity to wildlife habitat. Understory vegetation in upland areas of the watershed includes fruit bearing tree species such as Dogwood and Holly as well as various fruit bearing shrubbery such as Blueberry and Huckleberry. As noted

above, the Ware Creek basin has been actively managed for the production and harvest of softwood pine species, with the principal evergreen species found in the resulting mixed pine-hardwood portions of the watershed comprising immature Loblolly and Virginia Pine.

The Ware Creek watershed contains approximately 1168 acres of vegetated wetlands and open water systems. The vegetated wetlands found in the Ware Creek basin can be divided by large-scale community type into herbaceous, forested and scrub-shrub and the open water systems can be divided into estuarine, palustrine, and lacustrine open water. EPA notes that the Corps' Final EIS figure 3-4 identifies 44 "WETLAND TYPES FOUND IN THE WARE CREEK WATERSHED." EPA recognizes that these wetland types are based on the Classification of Wetlands and Deepwater Habitats of the United States (Cowardin, et al., 1979), and as such represent classifications officially adopted by the U.S. Fish and Wildlife Service. The classification system presented in the document is based on wetland habitats and therefore reflects important information useful in the evaluation of the Ware Creek area in terms of wildlife habitat suitability.

EPA recognizes the difficulty in obtaining accurate estimates of productivity in vegetated communities, particularly aquatic communities affected by tidal influence, and that representative approximations of primary production rates do not reflect absolute values for the subject watershed. EPA notes that the values presented in Table 4 of the Recommended Determination are approximations of primary production rates for ecosystem types similar to those found in Ware Creek and that extrapolation of those figures to the subject area provides relative estimates of primary production values for the system. EPA regards the use of approximations to provide qualitative analyses of the relative productivity of the communities in Ware Creek as reasonable and useful for the purpose of this deter-

mination. Approximate annual production values for wetland cover types encountered indicate that wetlands in the Ware Creek basin are typically the most productive plant communities in the watershed with scrub-shrub and herbaceous wetlands exhibiting relative estimates of net primary production greater than double that of the upland forested communities. Approximate values for forested wetlands show essentially equivalent rates of net primary production as for upland forested areas. Of the open water cover-types, estuarine open water communities exhibit approximate values of net primary production nearly one and one-half times that of upland forested areas. Representative figures of net primary production values for lacustrine open water communities of the type which would be created by implementation of the proposed Ware Creek reservoir are least of all cover-types found in the Ware Creek basin and are less than one-half that of typical values for upland forested communities. Most importantly, representative figures of net primary production values for lacustrine open water communities of the type which would be created by implementation of the proposed Ware Creek reservoir indicate that these systems are approximately 20 percent as productive as typical scrub-shrub and herbaceous wetland cover types.

Herbaceous wetlands, the most prevalent wetland type found in the Ware Creek basin, are typically vegetated by Cordgrass and Needlerush species in the tidal saline portions of the Creek near the creek mouth. Upstream of the creek mouth, where tidal influence and salinity decrease, wetland vegetation grades from cordgrasses and bulrushes to a range of species including Wild Rice, Cattails, Arrow Arum, Pickerelweed and Bulrushes. Tidal freshwater portions of the Creek support a diverse plant association which are more structurally complex than tidal estuarine communities. Further, edges of the area are characterized by upland tree and shrub species which are excluded from the more hostile saline-estuarine

environments downstream and which benefit from the periodic tidal freshwater flooding. In non-tidal freshwater portions of Ware Creek, including areas influenced by Beaver activity, herbaceous wetland communities are characterized by Cattails, Burreeds, Rice Cutgrass, Smartweeds, Sedges, and Wild Rice. Forested wetland systems account for approximately 28 percent of the wetlands in Ware Creek. The overstory of these systems is dominated by tree species such as Sycamore, Green Ash, Red Maple, Black Gum and Sweet Gum. Understory species of tree and shrub in these systems include Willow, Alder, Holly, Spice Bush, Blueberry, Buttonbush and Viburnum. Finally, scrub-shrub wetlands account for approximately seven percent of the Ware Creek wetlands. Species typical of these systems include Alder, Black Willow, Buttonbush, saplings of various forested wetland species and several of the herbaceous species found in non-tidal wetland areas.

The Recommended Determination and administrative record indicate that Beaver have had a significant influence on freshwater wetlands in the Ware Creek basin. Beaver activity has resulted in the obstruction of portions of the Creek and its tributaries and consequently has generated a complex mix of herbaceous, forested and scrub-shrub wetlands which contains plant species typical of all of those wetland types.

The plant communities present in the Ware Creek watershed, including those found in the proposed project site, exhibit a wide range of valuable natural functions and environmental attributes. The upland forested areas provide significant wildlife habitat in the form of both food and cover. Overstory tree species provide hard mast material for many terrestrial mammals as well as resting, nesting and cover habitat for birds and tree dwelling wildlife. Understory vegetation in the upland areas provides additional mast material in the form of fruits and berries as well as resting, nesting and escape cover for various wildlife species.

The diverse wetland communities in the Ware Creek watershed also functions to provide significant and valuable wildlife habitat. In particular, the tidal freshwater portions of the system provide substantial ecological niches and habitat opportunities due to the structural complexity of that community and the abundant and diverse food-producing vegetation. Many of the plant species found in the wetland communities of Ware Creek provide food and cover for waterfowl such as Black Duck and aquatic wildlife such as the River Otter as well as other birds and mammals. In addition, the vegetated wetland habitat currently found in Ware Creek is critical for certain life stages of various amphibians and reptiles. Vegetated wetland areas of the Creek which exhibit sufficient water levels serve as spawning and nursery grounds for resident fish populations and are used by mobile fish populations moving throughout the brackish/freshwater-estuary/creek system. Correspondence from the National Marine Fisheries Service contained in the administrative record indicates that Ware Creek is a suitable site for spawning of anadromous fish species during periods of high [freshwater] flow and sufficient fish population levels.

As noted previously, except for the Richardson's Millpond impoundment and minor obstacles caused by Beaver activity the aquatic systems within the Ware Creek basin are free from major obstructions which could impair the movement and migration of fish and other aquatic wildlife. In addition, the Ware Creek creek-wetland system serves as a relatively unobstructed corridor utilized by wildlife species which preferentially travel the corridor.

The administrative record suggests that in addition to direct wildlife habitat values, the current wetland systems also have the ability to capture and retain nutrients from basin runoff and process those nutrients for export. The juxtaposition of tidal

estuarine, tidal freshwater and non-tidal freshwater wetlands creates a diverse vegetative continuity which influences nutrient cycling and nutrient transport from the Creek's freshwater system into the York River and Chesapeake Bay systems. The Ware Creek vegetation communities also contribute a significant amount of litter material which is available for nutrient cycling and part of which is exported to downstream aquatic systems. Particularly, detritus derived from vegetation in tidal freshwater portions of the Creek system is considered more palatable compared to detritus derived from higher salinity estuarine portions of the system. Because the Ware Creek vegetated aquatic system is basically unobstructed, except for Richardson's Millpond, this attribute is particularly applicable to the wetland communities of the Creek. The administrative record indicates that, in addition to these nutrient cycling support functions, the vegetated wetland communities in the basin also serve to: assimilate peak stream flows; trap sediment; and stabilize the stream bank and deter bank erosion.

2. Wildlife

a. Habitat Evaluation Procedures

As part of the Clean Water Act Section 404 permit and Environmental Impact Statement review, an analysis of project impacts on habitat values was prepared using Habitat Evaluation Procedures (HEP) developed by the U.S. Fish and Wildlife Service. These standardized procedures are routinely used by regulatory and resource agencies to evaluate potential environmental effects of a proposed activity. A thorough description of the HEP analysis performed for the proposed Ware Creek impoundment is provided in Appendix A of the Corps Final EIS for the Ware Creek project. In summary, the HEP analysis prepared for the Ware Creek project generated numerical values based on wildlife cover-type habitat recognizing selected habitat characteristics of certain representative

wildlife species. Species were chosen to represent the range of currently existing habitat cover-types and to reflect changes in cover-type values expected as a result of the project. The final Ware Creek project HEP analysis provides information based on overall future adverse and beneficial impacts to the watershed including estimates of those impacts associated with commercial, residential and industrial development as well as successional changes in the natural watershed environment. The analysis also accounts for environmental benefits associated with the successful implementation and achievement of proposed project mitigation activities as they were proposed when the analysis was performed in 1987. The HEP procedure allowed analysis of cover-type changes for various time periods up to 50 years with and without implementation of the proposed Ware Creek dam and impoundment.

While EPA acknowledges the usefulness of the watershed-wide scope of the HEP analysis, issues of primary concern to this Section 404(c) action are related to impacts to wetlands and other waters of the United States and associated environments. Further, EPA believes that assumptions made regarding long-term (50 year) changes in the Ware Creek watershed as well as the presumption of full and successful mitigation of project impacts may tend to obscure the proposed project's impacts by essentially dispersing those impacts both spatially and temporally. Taking into account these qualifications of the Ware Creek HEP analysis, review of the HEP analysis nevertheless offers useful projections of the watershed environment without project implementation and provides extremely useful information regarding near-term project-related impacts to wetlands and associated habitat.

The HEP analysis of the Ware Creek impoundment proposal shows that, recognizing certain trends in watershed development, over the long-term time frame with construction

of the reservoir and fully successful completion of mitigation proposals basically similar to those currently offered by the project applicant, the Ware Creek watershed would experience an overall net loss of wetland wildlife habitat. The "with project" cover-type habitat values for "target year 50" (50 years from completion of the impoundment) indicate that while the scrub-shrub wetland cover-type would experience a relatively minor net decrease, forested and herbaceous wetland cover-types would experience a substantial net decrease approaching and exceeding fifty percent respectively. Under the no-project scenario at "target year 50," the cover-type values for forested wetlands would increase slightly, and herbaceous and scrub-shrub cover-type values would remain essentially unchanged. Review of the same long-term information for estuarine open water shows a slight decrease in that cover-type. As stated in the HEP analysis, implementation of the Ware Creek project would result in an average 30.2 percent decline in wildlife habitat values for vegetated wetlands and estuarine open water over the fifty year analysis time frame. The HEP projections also indicate that with inundation resulting from the proposed impoundment project, lacustrine open water cover-type would increase by an estimated 1298.4 percent.

In addition to forecasts of long-term habitat impacts, the HEP analysis prepared for the proposed Ware Creek project also provides near-term forecasts of impacts to wildlife habitat which would occur upon completion of the project but prior to successful implementation of mitigation plans. These data reveal that as a result of construction of the proposed dam and impoundment, vegetated wetland cover-type habitat values would decrease by approximately 60 percent in the near-term. As with long-term loss projections, herbaceous wetlands would experience the greatest loss in habitat values and forested wetland communities would experience substantial declines. The "with project" HEP analysis also reveals that in the near-term, scrub-shrub wetland habitat values would decrease to approxi-

mately fifty percent of present baseline values. As with the long-term projections, the near-term analysis indicates that with inundation resulting from the proposed impoundment project, lacustrine open water cover-type would increase by an estimated 1298.4 percent.

In summary, the HEP analysis performed for the proposed Ware Creek water supply impoundment shows that in the near-term, there would be a serious loss in wetland wildlife habitat values. Further, the HEP projections indicate that over the long-term, wildlife values for at least two wetland habitat types would be substantially lower than baseline figures for both present environments as well as future without-project environments. Under both time frames, the HEP evaluation indicates a considerable increase in open water habitat as a result of inundation of both wetland and upland habitats.

b. Applied Analysis

The Recommended Determination and administrative record confirm that the Ware Creek watershed, including the proposed project site, supports a substantial and diverse wildlife population and provides superior habitat conditions for a variety of fish, amphibians and reptiles, birds and mammals. Appendix A of the Recommended Determination as well as other documents prepared during development of the [E]nvironmental [I]mpact [S]tatement list a range of wildlife species which are either known to occur or are likely to occur in the Ware Creek area. Appendix A of the Recommended Determination identifies species of fish which have been positively identified as occurring in Ware Creek upstream of the project site and species of other wildlife which have either been seen or positively identified as existing in the affected area of Ware Creek, or are highly likely to exist in the area due to similarity of habitat requirements and known occurrence in nearby ecologically similar communities. Appendix A of the

Recommended Determination has been transposed for the purposes of this document and is included in Tables 1-4.

Because of the lack of adequate and long-term field study and the restricted access to property surrounding the Ware Creek impoundment site, it may be assumed that the list in Tables 1-4 do not fully portray the diverse wildlife community which is likely to occur in the project area. Futher, it may be assumed that the lists do not fully represent the seasonally transient and migratory populations which certainly utilize the Ware Creek project area for such necessary activities as resting and feeding.

As stated previously, Table 1 represents fish species collected upstream of the proposed Ware Creek impoundment and can therefore be assumed to include fish species which are present and which currently utilize the project site. In order to document the presence of animals other than fish in the Ware Creek project site, EPA Headquarters requested the U.S. Fish and Wildlife Service's (FWS) Glouchester, Virginia, Field Office to review the species listed in Appendix A and identify those wildlife species known to utilize the Ware Creek project site. The FWS project biologist has visited the proposed impoundment site many times and was able to provide EPA with professional expertise in identifying wildlife species listed in Appendix A which have been positively identified as occurring in the project site. Wildlife identified by the FWS project biologist as species positively known to utilize the proposed project area includes 83 wildlife species which are marked in Tables 2-4 with an asterisk.

The wildlife tables indicate the presence of numerous species which depend upon the vegetated wetland and open water habitats of the Ware Creek basin for their survival. In addition, many of the non-aquatic wildlife species identified as occurring in Ware Creek wetland communities are species

which use the area non-preferentially (*i.e.*, they are not dependent on the wetland characteristics of the site per se) but which tend to thrive in the vegetated and relatively undisturbed Ware Creek watershed. Many of the species listed utilize various wetland habitat types as well as upland habitat.

i. Fish

Table 1 identifies 23 fish species which have been collected from stream environments upstream of the proposed Ware Creek dam site and can therefore be presumed to utilize portions of the project site. Species found on this list include important forage fish which provide a source of food for predatory fish and other wildlife. Game fish species found on the list of species found in Ware Creek include freshwater fishes such as Sunfish and Largemouth Bass as well as migratory estuarine fish species such as Spot and White Perch. As previously mentioned, the U.S. National Marine Fisheries Service (NMFS) has stated that Ware Creek is suitable for use as spawning habitat by anadromous species such as Alewife and Blueback Herring. Successful spawning however, depends upon seasonal high [freshwater] flow as well as adequate population levels. The administrative record indicates that use of the Ware Creek system by the species listed above was not recorded by several sampling efforts. NMFS also emphasized the importance of the Ware Creek system for use as spawning and nursery habitat for semi-anadromous White Perch. This species is considered by NMFS to be an important recreational fish species which also provides notable commercial harvest in Chesapeake Bay.

Fish species positively identified as occurring in the proposed Ware Creek project Site also include the American Eel, a catadromous species which moves downstream into Chesapeake Bay waters, eventually moving out into the Atlantic Ocean. The presence of this migratory species is further

evidence that the Ware Creek system can be considered available habitat for anadromous and catadromous fish species, and "open" to the dispersal, movement and migration of mobile aquatic species between Ware Creek and associated estuarine and oceanic aquatic environments. Also listed in Table 1 are fish species such as Spot, White Perch, Yellow Perch, Silverside, Sheepshead Minnow and Mummichog which utilize habitat throughout the entire tidal portion of the Ware Creek system.

ii. Amphibians and Reptiles

Table 2 identifies amphibian and reptile species that are either known to occur, or can reasonably be expected to occur, in wetland communities of the Ware Creek system. The table identifies species of salamanders, frogs, turtles, snakes and other reptiles and amphibians that commonly occur in and use during part of their life-cycle, areas with similar habitat characteristics (*e.g.*, food sources, cover, breeding and resting sites and other physical requirements) as those found in the proposed Ware Creek project impact area. Of the 20 species listed, 16 have been positively identified as occurring in the impoundment impact area.

Table 1. Fish species collected form Ware Creek stream habitats upstream of the proposed Site V dam (Ayers et al. 1980, J. R. Reed and Associates, Inc. 1982)

Longnose gar	*Lepisosteus osseus*
American eel	*Anguilla rostrata*
Gizzard shad	*Dorosoma cepedianum*
Redfin pickerel	*Esox americanus americanus*
Golden shiner	*Notemigonus crysoleucas*
Creek chub	*Erimvzon oblongus*
White catfish	*Ictalurus catus*
Yellow bullhead	*Ictalurus natalis*
Brown bullhead	*Ictalrus nebulosus*
Pirate perch	*Aphredoderus sayanus*
Sheepshed minnow	*Cyprinodon variegatus*
Mummichog	*Fundulus heteroclitus*
Mosquitofish	*Gambusia affinis*
Tidewater silverside	*Menidia beryllina*
White perch	*Morone americana*
Bluespotted sunfish	*Enneacanthus gloriosus*
Pumpkinseed	*Lepomis gibbosus*
Orangespotted sunfish	*Lepomis Humilis*
Bluegill	*Lepomis macrochirus*
Largemouth bass	*Micropterus salmoides*
Johnny darter[2]	*Etheostoma nigrum*
Yellow perch	*Perca flavescens*
Spot	*Leiostomus xanthurus*

2 Probable misidentification. The Tessellated darter (Etheostoma olmstedi) is a similar species that is much more likely to be found on the Virginia coastal plain.

Table 2. Amphibians and reptiles that occur (*), or are likely to occur, in the wetland communities of Ware Creek (USFWS 1989, VDGIF 1989, Schwab 1988).

Red-spotted newt*	*Ntophthalmus viridescens viridescens*
Spotted salamander	*Abystoma maculatum*
Fowler's toad*	*Bufo woodhousei fowleri*
Northern cricket frog*	*Acris crepitans*
Gray treefrog*	*Hyla crysoscelis*
Green treefrog*	*Hyla cinerea*
Spring peeper*	*Hyla crucifer*
Eastern spadefoot toad	*Scaphiopus holbrooki holbrooki*
Bullfrog*	*Rana catesbeiana*
Green frog*	*Rana clamitans melanota*
Pickerel frog*	*Rana palustris*
Southern leopard frog*	*Rana sphenocephala*
Eastern painted turtle*	*Chrysemys picta picta*
Redbelly turtle*	*Pseudemys rubriventris*
Eastern box turtle*	*Terrapene carolina carolina*
Five-lined skink*	*Eumeces fasciatus*
Broad-headed skink	*Eumeces laticeps*
Eastern worm snake	*Carphophis amoenus amoenus*
Rough greensnake*	*Opheodrys aestivus*
Black rat snake*	*Elaphe obsoleta obsoleta*

* = observed by USFWS.

iii. Birds

Table 3 lists bird species that are either positively known to occur, or can be reasonaby expected to occur, in wetlands communities of the Ware Creek system. The table identifies 108 species of ducks, herons, hawks, owls, woodpeckers, flycatchers and other birds that commonly occur in and use during part of their life-cycle, areas with similar habitat characteristics (*e.g.*, food sources, cover, nesting and resting sites and other physical requirements) as those found in the proposed project impact area. Of the 108 species listed in Table 3, 59 have been positively identified as utilizing wetland communities in the Ware Creek project area.

The variety of the observed bird species listed in Table 3 which preferentially utilize wetland areas, including the Wood Duck, Red-shouldered Hawk, American Woodcock, Barred Owl and Northern Parula Warbler, reflect the diverse wildlife habitat characteristics available in the Ware Creek wetlands. The administrative record indicates that the Ware Creek area supports substantial populations of Wood Duck, Mallard and Black Duck, the latter being a species with special breeding and nesting habitat requirements which are met in the Ware Creek system. In addition the Ware Creek wetlands, particularly the tidal freshwater communities present in the basin, support a diversity of plants which serve as food for these waterfowl species. Wetlands characteristic of Ware Creek offer a source of high energy foods during migratory seasons when waterfowl can best utilize them either prior to northward migration in the spring or following southward migration in autumn.

The presence of other bird species, which do not preferentially utilize wetlands but which have been identified as utilizing Ware Creek wetland habitat, including various woodpeckers, Red-tailed Hawk, and Wild Turkey, serves to con-

firm the complex wildlife habitat support aspects of the Ware Creek wetland communities. While these species do not depend upon wetland habitat for critical portions of their life-cycle, they tend to prosper under the current habitat characteristics of the Ware Creek wetland system.

The administrative record and Corps' Final EIS for the Ware Creek project indicate that the wetland system in the Creek may be or is utitized by three bird species of special significance. The EIS states that while the species is not known to nest in the area at present, there are anecdotal references to sightings of Southern Bald Eagles in the Ware Creek area. This species prefers open water environments and is likely to limit its activities to those portions of the watershed which provide adequate suitable habitat. In addition, the wetlands of France Swamp support a rookery site for the Great Blue Heron. The Great Blue Heron is a colonial waterbird species which returns to the same area each year and congregates in the Swamp's wooded wetland areas for mating, breeding and nesting. According to the 1987 Final EIS, the France Swamp Great Blue Heron rookery supported 81 nests, an increase from the 35 to 40 nests described in documents prepared for the project applicants in 1982. The rookery is one of several in the same physiographic region as Ware Creek, although correspondence from the FWS indicates that the rookery may be larger than average for the region. FWS notes that the Great Blue Heron displays a low tolerance for human disturbance and to the extent that relocation of the France Swamp Heron population occurs after severe disturbance or destruction of the rookery, that reestablishment would place stress on this and other affected populations. Finally, as stated above, the Ware Creek area is known to support an important population of Black Duck. This waterfowl species is of particular concern to regional waterfowl management policies because of significant and critical population declines since the mid-1950s. At present, the majority of concern for this species centers on loss of the

species' wintering habitat. As such, severe restrictions have been placed on the hunting of Black Duck and the North American Waterfowl Management Plan has set a goal of protecting and enhancing migration and wintering habitat for Black Ducks. Along with the Great Blue Heron, the Black Duck is identified by the Chesapeake Bay Program's Living Resources Task Force as a target species for the development of habitat requirements based upon "... recreational, aesthetic, or ecological significance and the threat to sustained production due to population decline or serious habitat degradation."

iv. Mammals

Table 4 identifies mamal species that are either positively known to occur, or can be reasonably expected to occur, in wetlands communities of the Ware Creek system. The table identifies 22 species of deer, squirrel, mouse, and other mammals that commonly occur in and use during part of their life-cycle, areas with similar habitat characteristics (*e.g.*, food sources, cover, denning and resting sites and other physical requirements) as those found in the proposed project impact area. Of the 22 species listed, seven species have been positively identified as utilizing wetland communities in the Ware Creek project area. Several of the species listed in Table 4, including the Muskrat, Beaver, and River Otter, are species which are commonly found only in wetland areas and which tend to thrive in vegetated wetland systems which offer adequate cover and material for food and denning requirements. Many of the other mammal species listed which are not obliged to utilize the aquatic wetland environment nevertheless take advantage of the abundant food and habitat resources available in the Ware Creek wetland communities and thus flourish as a result of the communities' habitat characteristics.

Included in Table 4 are several species which are important game species, particularly [White-tailed] Deer, and the

administrative record indicates that hunters successfully harvest these species. Table 4 also lists numerous small mammal species, such as the Meadow Vole and White Footed Mouse, which are considered an important food source for raptors and larger predatory mammals such as Gray Fox. Finally, the list of mammal species which are known to or are likely to currently utilize Ware Creek wetland communities includes furbearing mammals such as Mink, Beaver, River Otter and Muskrat.

Table 3. Birds that occur (*) or are likely to occur, in the wetland communities of Ware Creek (USFWS 1989, VDGIF 1989, Rhodes 1988, USFWS 1983).[3]

Pied-billed grebe*	Sora
Great blue heron*	American coot*
Great egret*	Killdeer
Green-backed heron*	Greater yellowlegs
Wood duck*	Solitary sandpiper
Green-winged teal*	Spotted sandpiper
American black duck*	Least sandpiper
Mallard*	Common snipe
Northern pintail*	American woodcock*
Blue-winged teal*	Black-billed cuckoo
Northern shoveler*	Yellow-billed cuckoo
Gadwall*	Eastern screech-owl
American widgeon*	Great horned owl
Canvasback	Barrel owl
Redhead	Ruby-throated hummingbird
Ring-necked duck*	Belted kingfisher*
Lesser scaup	Red-headed woodpecker*
Common goldeneye	Red-bellied woodpecker*
Bufflehead*	Downy woodpecker*
Hooded merganser	Hairy woodpecker*
Ruddy duck*	Northern flicker*
Osprey	Pileated woodpecker*
Bald eagle*	Eastern wood-pewee*
Sharp-shinned hawk	Acadian flycatcher*
Cooper's hawk	Eastern phoebe
Red-shouldered hawk*	Great crested flycatcher*
Red-tailed hawk*	Eastern kingbird*
Wild turkey	Purple martin

* = observed by USFWS.

3 Common names derived from the "Thirty-fourth Supplement to the American Or[ni]thologists' Union Check-list of North American Birds," Supplement to the Auk. Vol. 99(3), July 1982. Scientific names are not included because accepted common names accurately identify species in this taxonomic group.

Table 3. (Cont')

Tree swallow
Blue jay*
American crow*
Fish crow*
Carolina chickadee*
Tufted titmouse*
Red-breasted nuthatch
Brown creeper
Carolina wren*
House wren
Winter wren*
Marsh wren
Golden-crowned kinglet
Ruby-crowned kinglet
Blue-gray gnatcatcher*
American robin*
Gray catbird*
Northern mockingbird
Brown thrasher
European starling
Red-eyed vireo
Northern parula warbler*
Chestnut-sided warbler
Cape May warbler
Black-throated blue warbler
Yellow-rumped warbler*
Yellow warbler*
Black -throated green warbler
Yellow-throated warbler*
Palm warbler
Blackpoll warbler
Cerulean warbler
Black-and-white warbler
American redstart*
Prothonotary warbler
Northern waterthrush
Louisiana waterthrush*
Kentucky warbler*
Common yellowthroat*
Hooded warbler
Northern cardinal
Indigo bunting*
Rufous-sided towhee*
Song sparrow*
Swamp sparrow*
White-throated sparrow*
Dark-eyed junco*
Bobolink
Red-winged blackbird*
Rusty blackbird
Common grackle*
American goldfinch

* = observed by USFWS.

Table 4. Mammals that occur(*), or are likely to occur, in the wetland communities of Ware Creek (USFWS 1989, VDGIF 1989, Jackson et al. 1976).

Virginia opossum *Didelphis virginiana*
Least shrew *Cryptotis parva*
Southern shrew *Sorex loagirostris*
Hoary bat *Lasiurus cinereu*
Big Brown bat *Eptesicus fuscus*
Seminole bat *Lasiurus seminolus*
Northern yellow bat *Lasiurus intermedius*
Little-brown myotis *Myotis lucifugus lucifugus*
Gray fox* *Urocyon cinereoargenteus*
Raccon* *Procyon lotor*
Long-tailed weasel *Mustela frenata*
Mink *Mustela vison*
River otter* *Lutra canader*
White-tailed deer* *Odocoileus virginianus*
Gray squirrel* *Sciurus Carolinensis*
Beaver* *Castor canadensis*
Marsh rice rat *Oryzomys palustris*
White-footed mouse *Peromyscus leucopus*
Meadow vole *Microtus pennsylvanicus*
Dark meadow vole *Microtus pennsylvanicus nigrans*
Meadow jumping mouse *Zapus hudsonius*
Muskrat* *Odatra zibethica*

* = observed by USFWS.

III. ADVERSE IMPACTS OF PROPOSED PROJECT

A. IMPACTS TO WILDLIFE

Initial project construction would require the removal or destruction of vegetation at or near the project dam site and in the impoundment area below +28 feet mean sea level and thus the near total loss of unique and valuable vegetated upland and wetland systems in the impoundment area. Clearing activities necessary for reservoir construction would futher involve the removal of a majority of the organic material from the proposed reservoir pool. This clearing would result in the direct removal and loss of 425 acres of functional wetland and open water habitat and 792 acres of adjacent forested upland habitat and would have a substantial direct impact on wildlife. Of the aquatic habitat directly lost as a result of the project, 381 acres are vegetated wetlands and the remaining 44 acres are either palustrine, estuarine or lacustrine open water systems. Of the vegetated wetlands which would be lost as a result of clearing activities, the majority are herbaceous wetlands (47%) and forested wetlands (40%), with scrub-shrub wetlands (13%) accounting for the remaining acreage. The vegetated wetlands which would be destroyed by the project represent over 38 percent of the total wetland acreage of the watershed and over 67 percent, approximately 55 percent and over 28 percent of the scrub-shrub, forested, and herbaceous wetlands respectively. The impoundment would result in the inundation and destruction of areas considered as Resource Category 1 by the U.S. Fish and Wildlife Service and as such would destroy wildlife habitat considered to be unique and irreplaceable on a regional basis.

During land clearing activities preceding dam construction, wildlife such as small mammals, reptiles, amphibians, and invertebrates which could not readily escape the impoundment project site would perish. Because of limited mobility, many

individuals of these species would be destroyed by land clearing machinery or would die as a result of the loss of suitable hiding or resting cover and source of food. In addition, certain aquatic wildlife, including fish species, would be adversely impacted by initial land clearing activities due to the near-term loss of necessary aquatic life support systems. More mobile terrestrial wildlife and birds, as well as wildlife characteristic of wetland communities, would be forced to migrate out of the impoundment site in search of suitable habitat. The Corps Final EIS, however, indicates that there is limited suitable habitat in the Ware Creek basin available for immigration of wildlife which would be displaced by the proposed project and that migrating individuals would not find adequate habitat or would displace other individuals. This lack of available habitat would result in the further direct mortality of affected wildlife over the near-term.

The administrative record sustains the conclusion that the Ware Creek wetland systems currently support significant and diverse wildlife habitat values and that a broad range of wildlife currently utilize the Ware Creek impoundment site wetland communities. The area exhibits significant habitat characteristics (*e.g.*, food sources, cover, nesting and resting sites and other physical requirements) which are vital to both resident wildlife populations and species which utilize the area for different stages in their life-cycle. Futher, wetlands of the Ware Creek impoundment project area support wildlife species which preferentially depend upon the wetlands for their habitat requirements as well as wildlife species which do not require that habitat type but which tend to benefit from the wetland attributes. As stated previously, implementation of the Ware Creek water supply project would destroy a significant acreage of wetlands and would adversely impact associated wildlife values. The magnitude of this impact is recognized and summarized in the HEP analysis previously cited which concludes that construction of the proposed dam and impound-

ment would reduce vegetated wetland cover-type habitat values by approximately 60 percent in the near-term with herbaceous wetlands experiencing the greatest loss in habitat values and forested wetland communities experiencing substantial declines. The "with project" HEP analysis also reveals that in the near-term, scrub-shrub wetland habitat values would decrease to approximately 50 percent of present baseline values.

In addition to adverse impacts associated with obstructing the present aquatic system, planned municipal water supply withdrawal would reduce average freshwater stream flow from Ware Creek immediately downstream from the dam site from 12.4 mgd to 3.3 mgd. This change would alter both the downstream vegetated wetland communities and the nutrient transport mechanisms present in the Ware Creek system and would have serious adverse effects on associated ecological communities.

While it is difficult to quantify the exact impact of the impoundment and water supply withdrawal on the Ware Creek system's nutrient flux and export of dissolved organic and detrital material, it is evident that construction of the Ware Creek impoundment would severely and adversely alter the current nutrient regime. Placement of the dam structure would impede or prevent the downstream export of a substantial percentage of the amount of particulate organic material currently passing through the creek system into the York River. Water removed from the water supply reservoir as part of the operation of that facility would further limit the downstream export of dissolved and particulate organic material and freshwater discharge into the York River. The administrative record shows that under normal nutrient loading conditions, nutrients exported into estuarine systems, such as the York River, by freshwater discharge, such as Ware Creek, support both detritus-based and plankton-algae based estruarine food webs. The proposed dam and reservoir project would directly result in decreased nutrient input into the York River estuarine sys-

tem. The present Ware Creek detrital/nutrient export mechanism contributes to the estruarine food web of the York River and can reasonably be considered to augment the estuarine environment of the Chesapeake Bay.

In Addition to adverse impacts to nutrient transport, implementation of the proposed project and operation of the water supply aspects of the reservoir would substantially alter the vegetation communities downstream of the dam. As noted in the administrative record, changes in the physical and chemical hydrologic regimes downstream of the dam would result in a conversion from diverse structurally complex vegetated communities to less diverse plant communities. Further, implementation and operation of the project would essentially eliminate tidal freshwater wetlands from the Creek system and would thereby eradicate plant species which are known to provide critical support functions to important wildlife species and which contribute readily decomposed and more palatable detrital material to the associated aquatic food chain.

1. Fish

Construction of the dam and impoundment project would substantially alter the overall hydrologic regime of the Ware Creek aquatic system by replacing the current vegetated flowing stream system with a lake system. This change would in turn result in a major modification of the wildlife habitat characteristics of Ware Creek. The Corps Final EIS concludes that some stream species of fish could eventually be eliminated from the Creek due to this change in flow regime. From a habitat perspective, recognizing the incised topography of the Ware Creek basin and reservoir pool, the extent of aquatic areas supporting vegetated shallows necessary for fish habitat would be limited primarily to the upper regions of the impoundment. This decline and change in vegetated aquatic areas which currently serve as spawning, nursery and cover habitat would

adversely impact fish species which use those habitats. In addition, the administrative record suggests that the Virginia Department of Game and Inland Fisheries would augment natural fish populations with supplementary stocking of forage and game fish species. It is reasonable to expect that a managed recreational game fishery would substantially alter the abundance and diversity of current natural fish populations and modify the species composition to foster a less diverse population more typically adapted to relatively static lake environments.

In addition to direct project impacts to fish species utilizing aquatic habitat in the impoundment site, placement of the dam structure would adversely affect the movement of fish species in the Ware Creek system. Construction of the reservoir dam would essentially close the aquatic pathway currently available for the natural passage and migration of fish species. The adverse implications of this project-induced change on highly mobile fish species is reinforced by evidence that the present open system provides access for the semi-anadromous[4] White Perch which is considered a trophic link between the Upper Ware Creek watershed and associated estuarine systems and which is also considered an important commercial and recreational fish species by the National Marine Fisheries Service (NMFS). In addition to adverse impacts to a known semi-anadromous species, truncation of the current Ware Creek system would eliminate the availability of suitable spawning habitat for anadromous alosids (*i.e.*, Alewife and Blueback Herring) in the system and would limit future use of the system by the catadromous American Eel.

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[4]Semi-anadromous is defined by the National Marine Fisheries Service as a fish species which spawns in fresh waters but lives most of its life in estuarine waters.

Adverse impacts to fish species are not limited to physical effects to resident and migratory species utilizing the proposed project area. As noted previously, the Ware Creek dam would isolate a significant majority of the Ware Creek watershed from the York River and would result in the uncoupling of the current aquatic continuum between the freshwater stream and the York estuarine system. NMFS has concluded that as a result of implementation of the project, Ware Creek would cease to be a sub-estuary of the York River stating, "[a]bove the dam, Ware Creek will become a freshwater lake having limited ecological interaction with the York; below the dam, Ware Creek will be no more than a lagoon or cove of the York." Implementation of the project would severely limit the ecological link between Ware Creek and the York River.

2. Amphibians and Reptiles

As stated above, implementation of the proposed Ware Creek impoundment would require the removal of a significant portion of the vegetated wetland communities in the basin and would result in the inundation of those areas. The destruction of the unusually diverse vegetated wetland systems present in the project site and their replacement with an open water lake system would substantially reduce the available habitat for reptile species and would have a particularly detrimental impact on habitat utilized by amphibian species.

Clearing of vegetation and removal of organic material from the impoundment area would eliminate a substantial portion of currently available resting, escape, and cover habitat for a broad range of reptiles and amphibians likely or known to occur in the Ware Creek project site. Moreover, removal of the vegetation and alteration of the Creek hydrologic regime would substantially alter the breeding habitat for both reptile and amphibian wildlife species. By the very nature of amphibian biological requirements for both terrestrial and aquatic envi-

ronments, these species would be adversely impacted by the project. The area's diverse vegetated wetland environment combined with the variable hydrology characteristic of the Ware Creek system provides abundant suitable safe breeding and nursery habitat for amphibian species. Conversely, the relatively deep, expansive open water habitat and relatively abrupt edge which would be created by the proposed impoundment would offer only limited available habitat for amphibian species. As with fish species, the proposed impoundment would provide limited vegetated edge for amphibian habitat except in the upper portions of the impoundment. Furthermore, because the impoundment would be managed for recreational fisheries, predatory fish stocked in the impoundment would decrease the suitability of the proposed impoundment as habitat for amphibian species. In summary, removal of vegetated communities from the impoundment area and inundation of the reservoir would substantially decrease the overall available habitat for both reptile and amphibian species and would be particularly disruptive to the breeding habitat requirements of amphibians. The adverse impacts of the proposed project would reduce both the number of individuals utilizing the area and the diversity of amphibian and reptile species which could successfully exploit the habitat of the altered environment.

3. Birds

Implementation of the proposed impoundment project would have a profound impact on the broad range of bird species which currently utilize the Ware Creek area including the proposed reservoir site. While the proposed open water reservoir with its mitigation islands would provide feeding, nesting and resting habitat for primarily waterfowl species and fish-eating raptors, implementation of the project would severely reduce available territory for other types of birds which currently thrive in the vegetated wetland and upland habitat as well as species which preferentially use the present vegetated

wetland habitat. Clearing of the overstory trees from forested upland and wetland areas and removal of scrub-shrub wetlands from the impoundment site would destroy a majority of the diverse structural environment which is utilized by resident and migratory bird species for foraging, breeding, nesting, escape and cover habitat. In addition, removal of understory plant species from the project site would substantially reduce shrubs and vines which supply seeds, berries and soft mast and which provides a varied source of food for bird species. Removal of the herbaceous wetlands in the proposed project site would futher impact habitat values of the area by eliminating cover and foraging habitat currently utilized by resident and migratory bird species. Overall, the proposed project would result in a considerable reduction of habitat for a robust variety of bird species and would offer habitat for a limited number of specialized bird species.

As noted in the previous section, the Ware Creek area supports a significant population of Great Blue Heron which returns to the same area in France Swamp each year. The Herons congregate in the Swamp's wooded wetland areas for mating, breeding and nesting. Due to disturbance and removal of vegetation and flooding of nesting trees, implementation of the Ware Creek project would destroy the Heron rookery currently existing in the project site. The Corps Final EIS concurs with the finding that the rookery would be lost and concludes that prospects for resettlement of the colony within the Ware Creek watershed would be highly uncertain. Destruction of the rookery would force the colony to search for an alternative site for mating, breeding and nesting and may place undue strain on other Heron colonies in the Peninsula region as the Ware Creek population invades other rookeries in search of suitable habitat. While EPA recognizes the project applicant's mitigation proposals for loss of the Ware Creek Heron rookery, the administrative record suggests that the unique and poorly understood nature of the Great Blue Heron's habitat

requirements make[s] the likelihood of truly successful mitigation extremely uncertain. EPA believes that given the present state of knowledge about the habitat requirements of the Great Blue Heron, it cannot now be stated with any assurance that the loss of the Great Blue Heron rookery to the Ware Creek project can be mitigated.

In addition to adverse impacts associated with destruction of habitat, implementation of the project and alteration of the present Ware Creek hydrologic regime would have a substantial influence on vegetation downstream of the impoundment. As demonstrated in the results of research conducted by the Virginia Institute of Marine Science, the proposed project would substantially change the salinity of aquatic environments in the middle and lower portions of Ware Creek. As a result of project-induced reductions in freshwater flow and obstruction of the stream channel by the dam, vegetation downstream of the dam would over time convert to vegetation characteristic of brackish tidal estuarine environments. This change would have two impacts on the current Ware Creek environment downstream from the proposed dam. First, the change in creek hydrology and the resulting modification of salinity distribution would result in a profound reduction in the availability of food for various resident and migratory bird species. Bird species which currently utilize the seeds, berries, roots, and tender shoots of the diverse plant species found in tidal freshwater and oligohaline portions of Ware Creek for foraging and feeding would be adversely impacted as vegetation shifts to less diverse and less palatable monotypic plant populations characteristic of the mesohaline reaches of the Creek. Second, modification of the salinity distribution in the middle and lower Ware Creek environment would reduce the structural diversity of the plant species present. According to a report prepared by the Virginia Institute of Marine Sciences, tree and shrub species such as Red Maple, June Berry and Buttonbush, would be lost as a result of the modifications to salinity caused by

decreased freshwater input into the Creek system. The affected portions of the stream would become populated by structurally less complex herbaceous species. As a result of this change, resident and migratory bird species which currently utilize the diverse tree and shrub habitat for cover, nesting and resting habitat, would be adversely impacted by the proposed water supply withdrawal.

As stated above, the change in plant diversity which would accompany implementation of proposed water withdrawal strategies would have a grave adverse impact on bird species which preferentially utilize the impacted environment for foraging. One species representative of this population and of particular concern to present waterfowl management policies is the Black Duck. Black Duck populations have been declining steadily since the mid-1950's and there is concern over loss of the species' wintering habitat. As such, the North American Waterfowl Management Plan (Plan) has set a goal of protecting and enhancing migration and wintering habitat for Black Ducks by "protecting 50,000 additional acres of migration and wintering habitat on the east coast of the United States." The Plan is an agreement between the United States and Canada which provides a broad framework for the conservation and management of populations of ducks, geese and swans that occur in North America. The proposed impoundment project and associated adverse environment impacts would be contrary to the goals of the Plan.

As noted previously, the Black Duck is known to utilize the proposed Ware Creek project site and the area is currently considered by the U.S. Fish and Wildlife Service to be good quality habitat for dabbling ducks such as the Black Duck. While Black Ducks are known to consume a variety of natural foods including fruits, nuts, berries, seeds, aquatic plants, and invertebrate animals, they are less likely than similar species such as Mallards to utilize residual grains remaining in farm

fields. The predicted project-induced changes in vegetation would result in the placement of current plant species with marsh grass communities and would force the Black Duck and other similar foraging waterfowl species to search for food elsewhere, thereby increasing habitat stress on a representative waterfowl species which is currently experiencing population declines due to habitat loss.

4. Mammals

Clearing of the vegetation from the Ware Creek project site would destroy a significant acreage of upland and vegetated wetland habitat currently used by terrestrial and aquatic mammal species. While removal of the forested areas would reduce cover and denning habitat for arboreal species, such as the Gray Squirrel and Raccoon, reservoir site preparation and inundation of the impoundment would eliminate resting, cover and feeding habitat used by terrestrial mammals, such as [White-tailed] Deer. In addition, because of the topography of the area to be flooded by the water supply impoundment, the proposed project would reduce the available habitat for aquatic mammals such as Beaver and River Otter, which currently utilize vegetated wetlands in the Creek system. As previously noted, the administrative record indicates that wildlife habitat present in the Ware Creek watershed is likely to be unavailable for immigration of species displaced by the proposed project. This factor could preclude "absorption" of mammal populations which would be displaced by the proposed impoundment by the remaining wildlife habitat in the Ware Creek basin.

In addition to impacts to wildlife which would occur as a result of the clearing and inundation of the project site, operation of the water supply aspects of the proposed project would also impact mammal species which utilize the freshwater tidal and oligohaline areas downstream of the proposed dam site. Changes in vegetation which would accompany modification of the Creek's salinity distribution would reduce the availabil-

ity of suitable cover and foraging habitat for mammal species.

Placement of the dam and impoundment would effectively block a portion of Ware Creek and its tributaries to use by various migratory wildlife species. While the forested nature of the watershed would allow wildlife to avoid the impacted area, wildlife species which are migratory or highly mobile and which depend on the present wetland/aquatic corridor for their movement would be adversely impacted by the proposed impoundment.

B. IMPACTS TO RECREATIONAL AND COMMERCIAL FISHERIES

Impacts to the life history and habitat requirements of fish species are described in the previous section on impacts to wildlife. In addition to those impacts, EPA believes it is important to recognize potential impacts to the substantial benefits the present Ware Creek system provides to recreational and commercial fisheries. As previously noted the Ware Creek system currently supports a viable population of semi-anadromous White Perch, a species which the National Marine Fisheries Service considers important to both recreational and commercial fisheries. Also, the system unquestionably provides spawning and nursery habitat for other fish species sought by recreational and commercial fishermen as well as providing important habitat for a range of forage fish which serve as prey for larger game and commercial species. While the magnitude of the impact is difficult to predict, inundation of the proposed reservoir site and alteration of the vegetated communities downstream of the dam site would certainly reduce the ability of the Ware Creek system to support fish species and would influence the availability of game and commercial species in associated aquatic systems.

C. IMPACTS TO RECREATION

The administrative record does not indicate that significant recreational fishing exists in the Ware Creek basin except for limited ventures in the area of Richardson's Millpond. The majority of the stream area is currently posted and therefore has restricted public access. EPA recognizes that the proposed impoundment would likely provide greater opportunity for certain types of fishing by creating a 1200-acre lake with public access. As stated previously, implementation of the impoundment project would increase lacustrine open water habitat by a substantial 1298 percent. The project would thus result in a large increase in freshwater lake habitat. The administrative record, however, is unclear with regard to the quality of this habitat for recreational fishing opportunities. The Corps Final EIS states that recreational fishing is usually good in the early years of a reservoir, but may decline as nutrients are used up and the fish populations stabilize. Futher, it is reasonable to assume that drawdown of the reservoir which would be required on a periodic basis due to variable rainfall and the resulting mudflat "bathtub ring" might limit the desirability of the impoundment for recreational fishing.

As noted in previous sections, the Ware Creek system supports abundant bird and mammal species which are sought by hunters. The Ware Creek area, including the proposed impoundment site, contains duck hunting blinds and is known to be utilized by hunting clubs during the deer season. Previous sections of this Final Determination explain how populations of terrestrial mammals as well as game bird species would be adversely affected by the direct and secondary impacts of the proposed impoundment. Indeed, even if game species were to continue to prosper in the vicinity of the proposed impoundment, it is reasonable to assume that there would be certain restrictions on the use of firearms on and near the impoundment. Nevertheless, the administrative record does not contain substantial information on impacts to hunting and predictions of the extent of adverse impacts on the

recreational aspects of hunting supported by the present Ware Creek system would be speculative.

D. CUMULATIVE IMPACTS

Implementation of the Ware Creek water supply project would result in serious direct environmental impacts including the elimination of a substantial portion of the vegetated wetland acreage in the Ware Creek basin and alteration of the freshwater and organic energy export from Ware Creek. Recognizing the extent of those impacts, the relatively large scope of the Ware Creek proposal and proposal's potential adverse environmental impacts on associated aquatic systems, cumulative effects of the project must also be considered in EPA's Section 404(c) deliberations.

As proposed, the Ware Creek project would directly eliminate over 38 percent of the vegetated wetland communities in the Ware Creek watershed. Acreage figures provided in the Corps Final EIS indicate that while the proposed project would eliminate over 28 percent of the present herbaceous wetlands, approximately 55 percent of the present forested wetlands and over 67 percent of the present scrub-shrub wetlands would be lost in the watershed in the near-term. Allowing for fully successful completion of the proposed compensatory mitigation offered by the project applicant (which is uncertain and overstated, for reasons discussed below in Section IV of this determination), the administrative record indicates that only scrub-shrub wetlands would approach replacement by the mitigation; forested and herbaceous wetlands would continue to experience a substantial shortfall in habitat values from the present due to adverse impacts from the proposed dam would modify wetland communities downstream of the dam.

While the loss of over 38 percent of the vegetated wetland communities over the near-term, and the elimination and/or al-

teration of a sizable segment of the wetland communities in the Ware Creek basin over the long-term, would represent a substantial impact to the watershed, these losses would also contribute to the loss of wetlands in the York River watershed and the Chesapeake Bay. Information collected by EPA consultants, Gannet Fleming, during EPA Region III's review of the proposed project indicates that the lower York River watershed currently supports approximately 4100 acres of vegetated inland wetlands and that these wetlands comprise 2.26 percent of the watershed area. The research also indicates that, in addition to directly eliminating associated wetland systems through clearing and inundation, impoundment of other creek systems in the lower York River basin has uncoupled approximately one-fourth of the inland vegetated wetland systems from the lower York River estuary. Although the relative severity of effects would be of a different scale, the proposed Ware Creek project would result in similar types of impacts to the environment through impacts from inundation and obstruction of the Creek and would exacerbate adverse impacts which have already taken place in the lower York River basin.

The proposed Ware Creek project would also contribute to cumulative adverse environmental impacts experienced by the Chesapeake Bay. Historically, along with other wetlands in the mid-Atlantic region, Chesapeake Bay wetlands have experienced a major decline in acreage. Statistics indicate that from the mid-1950s until the late 1970s, the Bay watershed experienced wetland losses averaging over 2,800 acres annually with the majority of the decline taking place in estuarine vegetated and palustrine forested wetlands. Statistics for the same period also indicate a considerable net gain in freshwater ponds. EPA recognizes that wetland losses in the Bay watershed have come about as a result of many factors, many of which are beyond the scope of Section 404 of the Clean Water Act. Nevertheless, research by the Fish and Wildlife Service notes that in addition to other human-induced causes, "[c]reation of freshwater impoundments

was another important factor," contributing to wetlands loss in the Chesapeake Bay watershed with pond, lake, and reservoir construction accounting for approximately 30 percent of the losses. In Virginia, pond, lake, and reservoir construction was responsible for approximately 25 percent of the loss of palustrine vegetated wetlands with roughly 80 percent of those losses occurring in the Lower Coastal Plain region, including the James City County area.

EPA believes that the wetlands which are directly associated with the Bay environment, such as those in the lower York River, represent important natural resources which are necessary for maintenance and protection of valuable Bay environments. Further, EPA concurs with the findings of the Fish and Wildlife Service study of wetland trends in the five mid-Atlantic states including the Chesapeake Bay region, where they noted:

> We can easily see that huge gains in fresh water ponds and substantial losses of vegetated wetlands have recently taken place in the region. The importance of the gain in pond acreage to fish and wild life species has not been assessed and is still subject to much discussion. By contrast, the losses of vegetated wetlands (*e.g.*, emergent, scrub-shrub, and forested wetlands) represent known losses of many other environmental quality and socio-economic values provided free-of-charge to society by wetlands. Moreover, the significance of the vegetated wetlands losses is not simply reflected by the acreage lost alone, since prior to the mid-1950s, many wetlands had already been destroyed, making the remaining wetlands more important and future losses more serious.

The incremental loss of functional wetland systems which currently contribute to the environmental well-being of the York

River and the Chesapeake Bay and which help maintain and protect the environmental integrity of those systems represents a profound cumulative loss.

E. CHESAPEAKE BAY AGREEMENTS

As noted previously, the Ware Creek impoundment project would contribute to the adverse effects of cumulative environmental impacts in the Chesapeake Bay watershed. EPA's determination regarding the Ware Creek project is supported by commitments made by the Federal government and the Commonwealth of Virginia towards protecting and enhancing Bay environments.

In the 1987 Chesapeake Bay Agreement, the Federal government and states surrounding the Bay, including Virginia, recognized the importance of the Chesapeake Bay's resources and committed to managing those resources to halt and reverse serious declines in the quality and productivity of the Bay. Goals of the 1987 agreement which are relevant to EPA's decision include clear provisions for the restoration and protection of the Chesapeake Bay's living resources, their habitats and ecological relationships. The stated intent of this goal is in part to: "protect, enhance and restore wetlands... important to water quality and habitat; maintain freshwater flow regimes necessary to sustain estuarine habitats; and restore, enhance and protect waterfowl and wildlife." Compliance with and achievement of each of these management objectives relates directly to the proposed Ware Creek project and EPA's Section 404(c) action.

On January 5, 1989, in fulfillment of a "living resources" commitment of the 1987 agreement, the Chesapeake Executive Council, of which EPA and the Commonwealth of Virginia are members, adopted the Chesapeake Bay Wetlands Policy (Policy). As stated in the adoption statement, the Policy

establishes an immediate goal of no net loss of wetlands with a long-term goal of a "net resource gain." The Policy preamble continues, stating:

> Wetlands are of importance to the protection and maintenance of living resources associated with the Chesapeake Bay ecosystem as they provide essential breeding, spawning, nesting and wintering habitats for a major portion of the region's fish and wildlife, including migratory birds, endangered species and commercially and recreationally important wildlife.

The policy asserts that in order to protect existing wetlands and achieve a net resource gain in wetland acreage and function, the signatories must protect existing functioning wetlands. Further, the Policy declares that the underlying principle behind protection of the Bay wetlands is protection from "direct, indirect or cumulative impacts which result in losses of wetland acreage or function." The Policy establishes that the signatories will use existing procedures including regulation and protection standards to limit adverse impacts to wetlands and that "[o]nly in rare instances will losses of wetland acreage or function be allowed or considered justifiable."

Based upon declarations of protection strategy and management commitments made in the 1987 Chesapeake Bay Agreement and the 1989 Chesapeake Bay Wetlands Policy, EPA and the Commonwealth of Virginia have adopted principles and committed themselves to policies and actions which have as their goal the protection, restoration and enhancement of wetland communities associated with the Chesapeake Bay. As noted earlier, the proposed project, including proposed mitigation, would result in the short- and long-term loss of valuable wetland communities which currently support diverse wildlife habitat. Further, operation of the proposed project would diminish the flow of freshwater from the Ware Creek

watershed into the York River estuary and Chesapeake Bay and would alter habitat which currently supports regionally important waterfowl, such as the Black Duck, and other wildlife. EPA believes that this Final Determination is consistent with and appropriately implements policies and commitments embraced by EPA and the Commonwealth of Virginia.

IV. MITIGATION

Review of Region III's Recommended Determination and the administrative record revealed that the Region's discussion and conclusions with respect to the technical and policy issues associated with the County's proposed mitigation plan are accurate. Section VI.C, MITIGATION (pages 41-42), of the Recommended Determination is hereby adopted as part of this Final Determination, except for the Region's determination and the existing Ware Creek ecosystem cannot be adequately mitigated. The exceptional complexity and values of the proposed project site certainly represent a significant challenge with respect to any mitigation effort. However, in reaching its findings regarding unacceptable adverse effects resulting from the proposed impoundment, EPA considered the potential for James City County's mitigation proposal to compensate for the anticipated adverse effects to wildlife. As discussed below, EPA has determined that the County's mitigation proposal would not adequately mitigate the environmental losses that would result from the project.

James City County has developed a comprehensive mitigation plan which combines elements of wetland creation and wetland and upland preservation and enhancement in an attempt to compensate for the adverse environmental impacts that would result from the proposed water supply impoundment. The Recommended Determination states that, in all probability, James City County's is the most comprehensive mitigation plan put forth to date in this region. EPA reiterates the Rec-

ommended Determination's statement that James City County is to be commended for the effort. However, EPA must disagree with the County's opinion that, on balance, project construction along with the proposed mitigation would result in net environmental gains. EPA concludes that, from a technical perspective, the proposed mitigation plan would not adequately offset the anticipated adverse impacts to wildlife.

A. THE MITIGATION PLAN

James City County's mitigation plan includes wetland creation, wetland and upland preservation and the creation of potential Great Blue Heron nesting sites in Ware Creek (within the York River watershed); removal of an existing dam to facilitate reconnection of the impounded wetlands to the downstream system and reestablishment of anadromous fish access, and wetland creation in Yarmouth Creek (within the James River watershed); and extensive preservation of existing wetlands and uplands in the James River watershed (Yarmouth Creek and Powhatan Creek).

More specifically, in the Ware Creek watershed, James City County proposes to create approximately 103 acres of forested, scrub-shrub and herbaceous wetlands by creating 16 protection basins (impoundments) in the headwaters of the watershed totalling approximately 39 acres and 17 protection basins around the perimeter of the proposed reservoir totalling approximately 64 acres. In addition, the County proposes to create approximately 27 acres of freshwater tidal emergent wetlands downstream from the proposed dam site by backfilling dam material borrow sites with organic material removed from the proposed impoundment and planting freshwater wetland vegetation. The County also proposes to enhance (by replacing water intolerant species with wetland species to improve cover and food for wildlife) 155 sites totalling approximately 58 acres. The County's proposal with respect to pres-

ervation in the Ware Creek watershed includes preservation and enhancement (via selective planting of wetland species to increase cover and food for wildlife) of 34 wetland sites for a total of approximately 145 acres and to maintain and enhance buffer zones (a requirement of the County's Reservoir Protection Overlay District) of 200 feet and 100 feet around the proposed reservoir and all tributary streams, respectively, for a total of 2500 acres, as well as greenways which would be developed in conjunction with the projected residential development. To attempt to mitigate for the loss of the Great Blue Heron rookery, the County utilized the FWS Habitat Suitability Index Model to locate and design potential nesting sites both within and adjacent to the proposed reservoir.

In the Yarmouth Creek watershed, James City County's mitigation plan includes the removal of an existing dam which would reconnect a waterbody known as Cranston's Pond, as well as approximately 506 acres of wetlands, as estimated by the County, both adjacent to and upstream from the Pond to the James River system, and in conjunction with the replacement of a downstream road culvert, would attempt to reestablish anadromous fish access to the area. In addition, the County proposes to plant forested, scrub-shrub and herbaceous wetlands species in the approximately 37-acre area which is currently open water but would be available for planting after the dam is breached. In addition, James City County has proposed to select potential sites, after consultation with the Virginia Natural Heritage Program (VNHP), Virginia Council on the Environment and the Nature Conservancy, and subsequently acquire and preserve approximately $1 million worth of wet-

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[5] In its "Proposal" attached to a letter dated August 18, 1988, the County Administrator stated the participation of these organizations did not indicate either support for or opposition to James City County's proposed reservoir on Ware Creek.

lands and uplands in the Yarmouth Creek watershed.[5] Specifically, the County and the Nature Conservancy have proposed the purchase of the 1,320-acre Wright Island Tract, which is located below Cranston's Pond in the lower part of the watershed and contains approximately 873 acres of wetlands, an additional 200-acre tract which is also located below Cranston's Pond and is entirely wetlands and the 167-acre Geddy Tract which is located above Cranston's Pond in the upper part of the watershed and contains approximately 27 acres of wetlands. James City County reports that the Boy Scouts of America own the southern part of the watershed bordering the pond, that there are only two parcels in addition to the Geddy tract along the northern boundary, and therefore, that its efforts would have the effect of preserving most of the watershed surrounding Cranston's Pond. The County has indicated that the availability of the Wright Island,, Daniel and Geddy parcels has been confirmed in conjunction with the Nature Conservancy and has proposed to acquire them on or before the date that reservoir construction commences. The County has futher indicated that it would utilize the remainder of the $1 million to purchase additional parcels in the Yarmouth Creek watershed or in other watersheds after consultation with the aforementioned organizations. The second aspect of the County's preservation program involves the potential acquisition of preservation easements in the Powhatan Creek/Long Hill Swamp area in James City County. The County has indicated that VNHP has identified this area as one of top priority for preservation and that this area is developing rapidly. The County has further indicated that it would consult with the aforementioned organizations and subsequently apply $150,000 toward the purchase of preservation easements immediately after reservoir approval.

B. ANALYSIS OF THE PLAN

Review of the administrative record indicates that the County's proposed wetlands creation efforts are generally

feasible. However, EPA concludes that while the County's efforts would provide wetlands creation opportunities, review of results of previous wetland creation efforts reveal the difficulty of obtaining 100 percent success in creating wetlands and , in particular, creating wetland functions and values. For purposes of analysis of the compensatory elements of the County's mitigation plan, however, EPA has utilized a "best case" scenario.

1. Wetlands Creation

In total, the mitigation plan proposes, at best, the creation of approximately 167 acres of wetlands or approximately 44 percent of the 381 acres of existing forested, scrub-shrub and herbaceous wetlands that would be lost as a result of the proposed project. Approximately 103 acres is proposed in the aformentioned protection basins, 27 acres is proposed downstream in the dam material borrow areas and 37 acres is proposed in the "drained area" created by the proposed breaching to Cranston's Pond. EPA believes that these wetlands creation efforts would not adequately replace those wetlands, and their associated wildlife habitat values, that would be inundated and subsequently lost as a result of the proposed project. The proposed acreage is insufficient to replace the extent of wetlands that would be lost. Furthermore, the replacement wetlands would not provide the range of habitat values provided by the existing wetlands. While the aforementioned 37-acre mitigation effort would (if completly successful) increase wetlands acreage and provide their associated habitat values in the adjacent, James River watershed, it would not serve the habitat needs of the mammals, reptiles or amphibians displaced by the proposed reservoir.

Further, the Corps [Final] EIS states that some of the 64 acres to be included in the reservoir perimeter protection basins already includes wetlands and a package submitted by Virginia's

Secretary of Natural Resources indicates that approximately 17.5 acres of the proposed 39 acres to be created in the proposed headwater protection basins is already wetlands. Thus, this aspect of the mitigation would in fact create a maximum of only approximately 85 acres of wetlands, assuming that the effort would be 100 percent successful, and considering the unspecified acreage of existing wetlands in the reservoir perimeter protection basins.

The proposed mitigation plan also proposes the enhancement of approximately 58 acres of wetlands at 155 sites. However, the Corps concluded, in its Final EIS, that only a portion of these 58 acres, specifically the area between +32 and +35 feet msl, had the potential to survive as wetlands. Therefore, if completely successful, the mitigation plan would replace approximately 112 acres or 29 percent (plus, possibly some increment of the 58 acres) of the wetlands currently available in the proposed project site. EPA reiterates that this is a maximum estimate which assumes 100 percent success and does not account for the unspecified acreage of existing wetlands in the reservoir perimeter protection basins.

Regarding habitat values, the Corps Final EIS indicates that the 381 acres of wetlands within the proposed reservoir inundation zone are comprised of approximately 152 acres of forested wetlands, 180 acres of herbaceous wetlands and 49 acres of scrub-shrub wetlands. Review of the administrative record indicates that while the County's proposed wetland creation efforts are generally feasible, there is no information suggesting that the wetland creation effort would produce the existing cover-types or produce them in their current proportions or, therefore, that the created wetlands would exhibit the current range of habitat values. The 33 aforementioned protection basins would be created by constructing impoundments which are approximately five feet high to retain surface water in an attempt to inundate a larger area, therby providing wetland

creation opportunities. In its HEP analysis, FWS concluded that the proposed headwater and reservoir perimeter protection basins would develop into scrub-shrub and herbaceous wetlands, and that because the current seasonal hydrology would be replaced by permanent standing water, the scrub-shrub wetlands would not provide winter foraging habitat as they do now (these wetlands would provide brood rearing habitat for Wood Ducks; this habitat quality is currently provided by the existing wetlands). In addition, EPA notes that the projections for increased salinities downstream as a result of impoundment construction may preclude the establishment of species such as Wild Rice and Arrow Arum which have high food value for waterfowl. EPA concurs with the HEP analysis which concludes that the proposed mitigation (which, for the purposes of the HEP analysis, included the compensatory mitigation but did not include the preservation aspects of the County's plan) is insufficient to compensate for the loss of wetland wildlife habitat values.

2. The Great Blue Heron Rookery

EPA does not concur with the County's conclusion that, on balance, the best opportunity for the long-term survival of the Great Blue Heron rookery in the Ware Creek watershed is offered by construction of the proposed impoundment and implementation of the proposed mitigation plan. The County reached this conclusion by utilizing the Habitat Suitability Index for this species and calculating future scenarios under the current proposal, the three dam alternative and the no project alternative. In conducting this analysis and reaching this conclusion, the County assumed that the Heron colony would eventually be displaced, with or without the proposed project, and that the County's proposed creation of potential rookery sites, the 100-foot to 200-foot buffer provided by its Reservoir Protection Overlay District (RPOD) as well as the deterrent effect of this buffer and the proposed impoundment on residential development and timber-

ing activities, would provide the most conducive environment for recolonization in the Ware Creek watershed. Information in the administrative record indicates that Great Blue Herons nest in a variety of places and that isolation from disturbance is an important criterion for nest site selection. Although the County intends to avoid the colony during reservoir construction, there would be noise associated with impoundment construction activities as well as subsequent recreational activities on the reservoir, and increasing water elevations within the proposed impoundment would accelerate the loss of the nesting trees. Also, it is uncertain that the County's RPOD buffer would be sufficient to prevent disturbance and subsequent vacation of the rookery as a result of residential development and timbering activities after impoundment construction. In addition, as will be discussed below, there have been numerous projections of the extent of timbering activities and residential development in the Ware Creek watershed. EPA does not believe that the record supports the conclusion that all potential nesting trees will be lost in the absence of the project. EPA concurs with the conclusions of the Corps and FWS that, even with the proposed mitigation, the resettlement of the colony in the watershed is highly uncertain. While EPA agrees that the County's mitigation plan provides potential Heron nesting habitat, we do not agree that project construction, in conjunction with the aforementioned preservation/mitigation elements, represents the optimal scenario for continued Heron nesting in the Ware Creek watershed.

3. Preservation/Enhancement

EPA does not agree that the preservation elements in the County's proposed mitigation plan for the Ware Creek watershed represent substantive environmental gains such that, in conjuction with the aforementioned compensatory elements, they compensate for the anticipated adverse impacts to wildlife. EPA's review of the administrative record indicates that there will be development within the Ware Creek watershed with or without the pro-

posed reservoir. However, EPA does not believe that the administrative record supports the conclusion that in the absence of the proposed reservoir and the County's RPOD, development will occur in a more environmentally damaging fashion.

First, the record is inconclusive with respect to the type of development that would occur in the Ware Creek watershed with or without the proposed impoundment. For example, a report entitled "No Action Plan," August 12, 1986, prepared for Delmarva Properties, Inc., a subsidiary of the Chesapeake Corporation, which owns approximately 40 percent of the watershed, made the following points and conclusions: that without the proposed reservoir, it is unlikely that the County could justify retaining the RPOD Zone designation; that because there is a fundamental conflict between forestry activities and residential development the Chesapeake Corporation, in the absence of the RPOD, would likely timber its watershed holdings and subsequently sell them in piecemeal fashion; that the probable result of removing the controls imposed by the RPOD would be scattered, uncoordinated development first adjacent to Ware Creek and then within the scattered, uncoordinated development first adjacent to Ware Creek and then within the watershed that would be cumulatively detrimental to the watershed; and, that the evidence shows that the watershed will develop under any scenario with or without one or more reservoirs, principally because all of the land in the watershed is in private ownership. In a subsequent letter dated April 20, 1987, Delmarva Properties advised FWS that: the assumptions in the HEP analysis did not reflect Chesapeake Corporation's intentions for the property over the next 50 years; currently, much of Chesapeake's holdings in the interior of the watershed are designated "special interest property" owing to its greater value for commercial, industrial or residential development; in the absence of the proposed reservoir or in conjunction with the three dam alternative, many of these holdings, which include wetlands, would lose the aforementioned designation

(timber harvesting would become a more profitable use of the property) and be timbered and subsequently reforested and/or sold to other potential users; if the reservoir is constructed, only selective cutting would occur on most of the property. Subquent newspaper articles, however, indicate that the Chesapeake Corporation may have changed its intentions, at least with respect to part of its watershed holdings. These articles, published in March 1989, indicate that Stonehouse, Inc., a subsidiary of the Chesapeake Corporation, is planning to construct a 7,230-acre development to include residential, commercial and industrial facilities. Approximately 4400 acres of this proposed development are located within the Ware Creek watershed. The articles further state that Stonehouse has proposed buffer zones, storm water management ponds and wetland areas to protect the Ware Creek watershed and also proposed to preserve the land and build some small lakes if the reservoir were not built. The aformentioned articles suggest that the Chesapeake Corporation has revised not only its intentions with respect to its activities within the watershed, but also its previous conclusions regarding the relationship between the proposed reservoir and residential development.

James City County has opined that the potential for development and timbering activities to result in significant losses of wetlands and uplands habitat is such that, on balance, less environmental loss will be realized if the County's proposal, with the various habitat creation and preservation elements, is allowed to proceed. In its Great Blue Heron mitigation plan, the County projected that under the no-project and the three dam alternatives scenarios, the loss of forested wetlands and uplands due to residential development and timbering activities would be significant enough to potentially deprive the Herons of future nesting sites. EPA notes that the aforementioned newspaper articles appear to contradict the County's conclusions in this regard. In addition, the HEP analysis also made projections after coordinating with Delmarva Properties, Inc., and the James City County Planning

Commission and predicted that while residential development and timbering activities would result in a decline of upland forested habitat, including some selective cutting in forested wetlands, habitat values associated with this cover type would increase as the stands mature.

Further, EPA does not believe that the record supports the conclusion that there will be less habitat or that this habitat will be of lower quality without the County's RPOD. EPA notes that at the time of this writing, the RPOD is in the process of revision. In addition, in response to the County's legal counsel who advised that the County would consider implementing EPA's recommendations with respect to the RPOD (especially if it would affect the outcome of EPA's 404(c) determination), EPA notes that revisions to the RPOD would not address the totality of the Agency's concerns in this matter. The primary purpose of the County's RPOD, which includes the proposed 2500-acre buffer around James City County's portion of the reservoir, is to provide water quality protection for the proposed reservoir. A package submitted by Virginia's Secretary of Natural Resources states that the RPOD does not restrict residential landscaping to residential edges nor assure good habitat along the reservoir edge. Also, discussions with James City County revealed that while the RPOD would prohibit certain types of development (to the extent that this development would produce runoff which has the potential to contain pollutants which are prohibited by the RPOD), it would not, except for the buffer zone around the proposed reservoir, provide for any more conservation than the zoning which would apply in the absence of the RPOD.

EPA also notes that, if the reservoir is not built, the terrain of the Ware Creek watershed may serve to somewhat constrain the extent of development as well as its encroachment on the aquatic resources of the watershed. As the No Action Plan states, the terrain is a deeply incised flat plateau

with 5 percent to 20 percent side slopes draining to Ware Creek. The Plan goes on to state that level areas are confined to wetlands, steam beds and the finger-like ridges which are the residuals of the old plateau and that this terrain imposes very definite restrictions on development. Discussions with FWS as well as observations made during field visits (including the April 28, 1989 visit with representatives of James City County) lead EPA to concur with the statements in the Plan and conclude that the terrain in the Ware Creek watershed will serve to limit the amount of development, as well as its encroachment on and subsequent impacts to the aquatic resources of the watershed. In addition, the aforementioned No Action Plan as well as testimony at EPA's public hearing indicates that James City County has the capacity to be strict and innovative in developing land use controls which suggests that, even without the RPOD, residential development and timbering activities will be conducted in accordance with County controls and will not necessarily occur in a more environmentally destructive fashion. Regarding the RPOD's reservoir buffer, the quality of this buffer as habitat or as a corridor to facilitate wildlife movement would be adversely affected by the topography of the proposed reservoir banks, the abrupt transition from the aquatic to upland habitat, the juxtaposition of the buffer to remaining/compensatory wetland areas, and the degree of fragmentation of adjacent habitats by residential development and/or timbering activities.

Since the record is inconclusive with respect to the extent and type of development which would occur within the Ware Creek watershed, the relative value of the County's proposed preservation and enhancement of approximately 145 acres of forested wetlands cannot be conclusively determined. EPA notes that these existing wetlands continue to be subject to regulation under Section 404 which applies to almost all of the activities we understand to be planne for this area. EPA also notes that according to the package submitted by Virginia's

Secretary of Natural Resources, the forested wetland areas would theoretically be protected by the RPOD (that is, to the extent that they are located within the aforementioned 100-foot to 200-foot buffer). Therefore, the County's offer of preservation may, indeed, add relatively little to the existing level of protection for these wetlands and thus provide little real compensation for the actual, certain loss of wetlands associated with the proposed reservoir project.

As previously mentioned, the County's proposed mitigation plan also contains preservation elements in the Yarmouth Creek watershed and in the Powhatan Creek/Long Hill Swamp watershed. EPA believes that this aspect of the plan would produce environmental results if it preserves areas that would otherwise have become developed. However, EPA reiterates that the wetlands in these parcels continue to be subject to regulation under Section 404. In addition, no mitigation "credit" was given in the HEP analysis for the preservation aspects of the plan around Cranston's Pond because it was concluded that it was unlikely that this area would undergo residential development in the foreseeable future because of the current zoning as well as the lack of public utilities. Also, while the breaching of Cranston's Pond may result in additional wetlands as well as reestablishment of anadromous fish access to and detrital export from this part of the Yarmouth Creek watershed, these aspects of the proposed mitigation plan would not provide replacement habitat for wildlife displaced from the Ware Creek watershed as a result of the proposed impoundment.

V. CONCLUSIONS AND FINDINGS

As outlined previously in this document, for the purposes of this decision, EPA's review of the Ware Creek dam and reservoir proposal was limited to a determination of whether the environmental effects of the proposed project would have unacceptable adverse effects under statutory criteria at Section 404(c). The findings and conclusions in this document are based solely on consideration of the environmental effects of the Ware Creek proposal.

The Section 404(c) regulations define an unacceptable adverse effect as an impact on an aquatic or wetland ecosystem which is likely to result in significant degradation of municipal water supplies or significant loss of or damage to fisheries, shellfishing, or wildlife habitat or recreation areas. While Section 231.2(e) of the Section 404(c) regulations states that the evaluation of the unacceptability of such impacts should consider relevant portions of the Section 404(b)(1) Guidelines, for the purposes of this review, EPA did not consider the availability of less environmentally damaging practicable alternatives to the Ware Creek water supply impoundment as set forth in Section 230.10(a) of the Guidelines.

Based upon the specific review of all relevant documents in the administrative record for the July 10, 1989, Ware Creek Final Determination as supplemented for this decision (as indicated in Section I.D. of this determination), EPA finds that the wetlands and open water aquatic ecosystems within the proposed impoundment area, that area that would be directly affected by the proposed dam, support an uncommon and significant natural aquatic resource. The administrative record further supports the finding that the aquatic ecosystem in this area provides exceptional natural habitat upon which a variety of wildlife species depend for all or part of their life cycle. The administrative record provides clear evidence that the aquatic

portions of the Ware Creek system which would be directly affected by the proposed dam and reservoir project provide significant habitat for a multitude of wildlife species which are dependent upon that habitat.

EPA's current review of the administrative record supports the finding that the wetland and open water aquatic ecosytem that would be directly affected by the dam and reservoir project provides excellent habitat for a broad range of both resident and migratory bird species which use the area for feeding, breeding, roosting, or other activities. Additionally, EPA finds that the administrative record supports the finding that the aquatic habitat that would be directly affected by the dam and reservoir provides critical habitat to resident and transient fish, amphibian and aquatic mammal species. In addition, EPA finds that the aquatic habitat that would be directly affected by the dam and reservoir project provides superior food and cover habitat for various non-aquatic species which thrive in the mosaic of wetland and open water habitats.

Reexamination of the administrative record confirms that in addition to the direct loss of wetland and open water aquatic ecosystem resources and associated adverse impacts to wildlife that would result from construction and operation to the proposed dam and reservoir, reduced overall freshwater discharge from the Ware Creek system would substantially alter and adversely affect downstream habitats. Further, this reduction in stream discharge would diminish present detrital and nutrient export processes which help maintain aquatic food-chain mechanisms downstream of the "project area." Based on the administrative record EPA finds that the Ware Creedk dam would substantially reduce the output of organic material from the present aquatic ecosystem. Further, EPA finds that withdrawal and consumptive use of waters impounded by the reservoir would substantially decrease the amount of freshwater flowing from the Ware Creek system. Thus, based on a

review of the administrative record, EPA finds that construction of the proposed dam and reservoir on Ware Creek would result in the elimination of a wetland and aquatic ecosystem that directly provides significant habitat for aquatic wildlife, including fish, and indirectly contributes to the overall welfare of the aquatic environment of the York River and the Chesapeake Bay.

Based upon the review of the administrative record and upon an independent review of the acceptability of project related effects under Section 404(c), EPA concludes that the direct and significant impact on the Ware Creek wetland and open water aquatic ecosystem that would result from the proposed Ware Creek project would result in a significant loss of and damage to wildlife habitat. EPA concludes that the Ware Creek dam and reservoir project would result in unacceptable adverse effects to wildlife, including fish. EPA concludes that considerations of environmental effects alone of the James City County water supply dam and reservoir, as proposed, justify action under Section 404(c).

Upon reevaluation of the administrative record, EPA finds that the mitigation plan as proposed by James City County does not adequately offset adverse impacts to aquatic resources resulting from project implementation. EPA finds that the post-project reservoir system in conjuction with preservation and compensatory mitigation efforts proposed by the County would not adequately replace or compensate for the loss of or impacts to aquatic resource functions and values associated with the current Ware Creek wetlands and aquatic ecosystem. EPA therefore concludes that the mitigation proposed by James City County does not render the project acceptable under Section 404(c).

Thus, this determination withdraws the specification of the subject waters of the United States as described in the Department of the Army Section 404 permit number 84-0614-06 dated

March 1, 1991, and restricts the disposal of dredged or fill material in the subject waters of the United States for the purpose of constructing the James City County water supply dam and reservoir as proposed. Because the Corps of Engineers permit issued under Clean Water Act Sections 404(a) and 404(b) is subject to the Environmental Protection Agency's findings under Clean Water Act Section 404(c), this determination supersedes and renders ineffective the Corps Section 404 permit issued to James City County on March 1, 1991. This Final Determination does not pertain to other types of filling activities or discharges or to proposed filling activities or other discharges in other waters of the United States associated with Ware Creek. Other proposals involving the discharge of dredged or fill material in the waters of the U.S. at issue will be evaluated on their merits within the Corps of Engineers' Section 404 regulatory program.

/s/ LaJuana S. Wilcher — 3/27/92

LaJuana S. Wilcher — Date

Assistant Administrator for Water

APPENDIX H

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA

Newport News Division

JAMES CITY COUNTY, VIRGINIA,

Plaintiff,

v.

CIVIL ACTION
NO. 89-156-NN

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY and UNITED STATES ARMY CORPS OF ENGINEERS,

Defendants.

MEMORANDUM OPINION

This case returns to our Court after a long administrative and judicial journey. Since the late 1970's, James City County, Virginia, adjacent to the city of Williamsburg, has sought solutions to its growing demand for water. After extensive studies about a possible dam and reservoir on Ware Creek, the Army Corps of Engineers approved the project and issued a permit in accordance with the Section 404(a) of the Clean Water Act, 33 U.S.C. § 1344(a). The Environmental Protection Agency (EPA), however, pursuant to its authority under 33 U.S.C. § 1344(c), vetoed the project, arguing that viable alternatives to the Ware Creek project should be pursued.

When the county challenged the denial of a permit, this Court held that none of the EPA's "alternatives" was a realistic solution to an imminent water shortage, and therefore, on November 6, 1990, overturned the EPA's veto and ordered a permit to be issued for the project. See James City County, Virginia, v. EPA, 758 F. Supp. 348 (E.D. Va. 1990). On appeal, the Fourth Circuit approved the district court's deci-

sion that no practicable alternatives to the Ware Creek project exist; however, the Court of Appeals gave the EPA sixty days in which to determine whether, in the absence of alternatives, the Ware Creek project was "unacceptable" within the meaning of the Clean Water Act. James City County v. EPA, 955 F. 2d 254 (4th Cir. 1992). The EPA has vetoed the project again, and James City County seeks to have this second veto overturned.

Section 404(c) of the Clean Water Act, 33 U.S.C. § 1344(c), authorizes the Administrator of the EPA to deny or restrict the use of a site for the disposal of fill material that will have an "unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas." The regulations in 40 C.F.R. Part 231 govern Section 404(c)'s application. The Code of Federal Regulations states that "[i]n making this determination, the Administrator will take into account all information available to him, including any written determination of compliance with the section 404(b)(1) Guidelines made in 40 C.F.R. Part 230 ..." (emphasis added). Significantly, the regulations do not limit the EPA to the consideration of purely environmental factors, as suggested by the EPA.

In this case the EPA has only partly fulfilled its duty. In its Second Final Determination on Remand ("Second Determination"), submitted to the Court on March 27, 1992, the EPA considers both the initial and supplemental administrative records. The Second Determination contains 49 pages of analysis of the administrative record, considering the adverse impacts of the proposed Ware Creek project and the mitigation plan. As 40 C.F.R. Part 230 instructs it to do when reviewing a proposal that would affect our waters, the EPA has carefully analyzed the probable environmental impacts of the Ware Creek dam project.

The EPA neglects a significant consideration, however,

when it completely ignores James City County's desperate need for water. No mention of this need is contained in the EPA's evaluation of the acceptability of the reservoir project. While the regulations governing Section 404(c) do not advise the EPA of each of the limitless considerations that must enter an evaluation of a project's acceptability, the need for water is a factor it must consider. As the plaintiff points out, counsel for the EPA acknowledge during previous arguments that the EPA has an obligation to consider water supply when it analyzes the acceptability of a project pursuant to Section 404(c). See Transcript of Proceedings at 49-51 (Sept. 21, 1990); Appellant's Reply Brief at 8-9. Moreover, the regulations are obviously concerned with the effect a project has on municipal water supplies, for they instruct the EPA to restrict a site whenever it is determined that fill will have an "unacceptable adverse effect" on municipal water supplies, shellfish beds and fishery areas, ... wildlife or recreational areas." See 40 C.F.R. § 231.1(a). While normally one would anticipate a situation where fill was ruining the water supply, in this case, the refusal to allow a project has an adverse effect on municipal water supplies. The EPA now argues that it can look solely to environmental concerns and ignore vital human needs when it considers the "acceptability" of a project that affects the environment. The regulations do not support such a proposition, and we think it clear that the deference afforded administrative agencies makes it incumbent upon them to consider all factors when exercising their significant discretion.

The Fourth Circuit has indicated that in reviewing EPA decisions to veto issued permits pursuant to Section 404(c), this Court must determine whether the EPA's decision is supported by "substantial evidence."[1] While the EPA provides reams of environmental analysis, it neglects its duty to consider

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[1] James City County v. EPA, 955 F.2d 254, 259 n.5 (4th Cir. 1992); 5 U.S.C. § 706(2) (E).

all of the factors important to this project's acceptability or unacceptability -- namely the county's need for water, a need which it previously stated it should and would consider. We find, therefore, that the EPA's decision, based only on environmental factors, is unsupported by the substantial evidence required by the Fourth Circuit and necessary to veto a permit which has been already granted.

However, in addition to its failure to consider the admitted plight of James City County, we find that the environmental data in the administrative record also fail to provide substantial support for the EPA's position. This Court views the EPA's analysis of the ecological impact of the project to be flawed primarily because of its failure to consider the mitigation plan adequately. The EPA cites several values of the Ware Creek wetlands, a diverse watershed area containing 1168 acres of vegetated wetlands and open water systems.[2] This area provides a habitat for many types of wildlife and sends nutrients into the York River and Chesapeake Bay.[3] However, the EPA has presented skewed data on the anticipated net loss of wetlands and the damage to fish and wildlife, while ignoring the projected inevitable development of the area.

With respect to the net loss of wetlands (i.e. the loss after the mitigation plan is completed), the EPA's Memorandum in Support of its Motion for Summary Judgment contradicts the information in the Second Determination. The Second Determination cites a 60% loss of vegetated wetlands and 50% loss of scrub-shrub wetlands before mitigation, but almost no loss for the scrub-shrub wetlands and at least a 50% loss for the herbaceous wetlands after mitigation.[4] In its memorandum the EPA

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[2] Admin. R.A-31 at 3-5 (Final Environmental Impact Statement).

[3] Second Determination at 15.

[4] Second Determination at 17

incorrectly cites the premitigation figures as if they would be accurate after mitigation.[5] Thus, at the outset we note a faulty presentation of the extent of the environmental damage.

Moreover, while arguing that 425 acres of wetlands will be lost because of the project, the EPA fails to consider the Army Corps of Engineers' projections that between 167 and 295 acres of wetlands will be created, and that between 340 and 506 acres of wetlands would be enhanced by breaching the Cranstone Pond dam.[6] Moreover, 44 acres of presently nonvegetated open water are included in the 425-acre figure, thus further overestimating the damage.[7] Finally, according to the summary of mitigation efforts, 1645 acres of wetlands are designated for preservation and should be counted as 164 acres worth of mitigation "credit" by the EPA.[8] Indeed, the net loss of acreage is almost zero, not nearly the drastic exercise that the EPA projects.

The EPA further considered the damage to fish, noting that the project would isolate 17 to 18 square miles of the region, thus reducing the flow of water needed for fish to spawn. However, it failed to note that freshwater fish would have a much larger area in which to live.[9] Moreover, the mitigation plan removes a dam on the Yarmouth River, thus aiding the migratory efforts of the anadromous fish about which the EPA is concerned.[10] Indeed, the Fish and Wildlife Service considers the impact on fish in Ware Creek to be mitigated adequately.[11]

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[5] Def's Mem. Supp. Mot. for Summ. J. at 54

[6] Admin. R. A-54 at 7 (Record of Decision, Army Corps of Engineers); Admin. R. A-31 at 2-13, 4-25, 4-17.

[7] Second Determination at 27; Admin. R. A-31 at 2-13.

[8] Admin. R. D-48 at 3 (Summary of Mitigation); Plf.'s Mem. Supp. Summ. J., Ex. 8.

[9] Admin. R. A-31 at 4-12.

[10] Admin. R. A-31 at 417; A-8 at 12-13.

[11] Admin. R. G-23 at 6 & 8

While the project will temporarily dislocate several species such as the blue heron, there is substantial evidence that many species, including the heron, which has other, undisturbed rookeries in the area, will relocate into the new and expanded habitat to be created.[12] The construction plans provide careful consideration of wildlife during "vulnerable stages in the life cycle."[13] A "buffer strip" and "greenways" will be maintained for the preservation of wildlife.[14] While the project will certainly disrupt wildlife in the watershed, the EPA's assumptions about the severity of the disruption are not based on substantial evidence.

Finally, the EPA, considering it "legally irrelevant," seems to overlook the extent of the development that will occur if the reservoir and dam are not built. Far from irrelevant, this significant piece of information is part of the entire picture which the EPA is bound by the regulations to consider in its analysis of the "acceptability" of the project. The evidence is clear that the Chesapeake Corporation, which owns much of the Ware Creek watershed, is committed to development.[15] In the Second Determination the EPA acknowledges that the Chesapeake Corporation is committed to timber harvesting in the area.[16] Piecemeal timbering would be "cumulatively detrimental" to the watershed, and this development has been deemed inevitable.[17] The EPA has instead relied on newspaper articles that opine that a proposed residential development will protect the watershed. We cannot in good faith accept the projections of these articles when the overwhelming evi-

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[12] See, e.g., Admin. R. A-31 at 2-15, 4-19, 4-21.

[13] Admin. R. A-31 at 2-14.

[14] Admin. R. A-31 at 2-15, 4-20.

[15] Second Determination at 43; Admin. R. A-31 at 2-37; Plf's Mem. in Supp. of Mot. for Summ. J., Ex. 9.

[16] Second Determination at 43-44.

[17] Second Determination at 44.

dence suggests that timbering and its destructive impact on the area, including the debated blue heron rookery, is the more likely occurrence.

In this case, James City County has proposed an extensive mitigation plan that the EPA itself identifies as "the most comprehensive mitigation plan put forth to date in this region."[18] The county's mitigation plan includes the creation of wetlands, the preservation of wetlands, the creation of Blue Heron nesting sites, and the removal of a dam in order to reconnect presently impounded wetlands. In the Second Determination, the EPA states: "James City County has opined that the potential for development and timbering activities to result in significant losses of wetlands and uplands habitat is such that, on balance, less environmental loss will be realized if the County's proposal...is allowed to proceed."[19] The EPA disagrees because it believes the plan would recreate only 44% at best of the existing wetlands that will be destroyed by the reservoir, and the new wetlands would not offer identical habitats for the species now living at Ware Creek. The mitigation effort, however imperfect, will only occur if the reservoir is built, not if the Chesapeake Corporation cuts its timber or otherwise develops its watershed. We applaud the plan developed by the county, and think the EPA short-sighted in its preference for piecemeal, unmitigated destruction of a valuable watershed over a well mitigated, vital reservoir project.

For all of the above reasons, this Court finds the EPA's action pursuant to 33 U.S.C. § 1344(c) to be unsupported by substantial evidence. We, therefore, will require, by Order entered simultaneously herewith and making reference hereto, that a permit for the construction of the Ware Creek reservoir

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[18] Second Determination at 39

[19] Final Determination at 44.

and dam project be issued.

It is so **ORDERED.**

United States District Judge

Norfolk, Virginia
August 4, 1992

APPENDIX I

PUBLISHED

UNITED STATES COURT OF APPEALS
FOR THE FOURTH CIRCUIT

No. 92-2294

James City County, Virginia
Plaintiff-Appellee,

v.

ENVIRONMENTAL PROTECTION AGENCY;
UNITED STATES ARMY CORPS OF ENGINEERS,
Defendants-Appellants.

SOUTHERN ENVIRONMENTAL LAW CENTER;
VIRGINIA WILDLIFE FEDERATION
NATIONAL WILDLIFE FEDERATION;
CHESAPEAKE BAY FOUNDATION;
Amici Curiae.

Appeal from the United States District Court
for the Eastern District of Virginia, at Newport News.
John A. MacKenzie, Senior District Judge.

(CA-89-156-NN)

Argued: June 10, 1993

Decided: December 30, 1993

Before RUSSELL, Circuit Judge, SPROUSE, Senior Circuit Judge, and BRITT, United States District Judge for the Eastern District of North Carolina, sitting by designation.

Reversed by published opinion. Senior Judge Sprouse wrote the opinion, in which Judge Russell and Judge Britt joined.

COUNSEL

ARGUED: Martin William Matzen, UNITED STATES DEPARTMENT OF JUSTICE, Washington, D.C., for Appellants: Donald A. Carr, WINTHROP, STIMSON, PUTNAM & ROBERTS, Washington, D.C., for Amicus Curiae. William B. Ellis, MCSWEENEY, BURTCH & CRUMP, P.C., Richmond, Virginia, for Appellee. **ON BRIEF:** Vicki A. O'Meara, Acting Assistant Attorney General, David A. Carson, Edward J. Shawaker, UNITED STATES DEPARTMENT OF JUSTICE, Washington, D.C.; Richard Cullen, United States Attorney, Alexandria, Virginia; Susan L. Watt, Assistant United States Attorney, Norfolk, Virginia; Caroline Wehling, Office of General Counsel, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, Washington, D.C., for Appellants. William L. Thomas, WINTHROP, STIMSON, PUTNAM & ROBERTS, Washington, C.C.; Ann Powers, Vice President & General Counsel, CHESAPEAKE BAY FOUNDATION, INC., Annapolis, Maryland; Roy A. Hoagland, Virginia Staff Attorney, CHESAPEAKE BAY FOUNDATION, INC., Richmond, Virginia, for Amicus Curiae. Frank M. Morton, III, JAMES CITY COUNTY, Williamsburg, Virginia, for Appellee.

OPINION

SPROUSE, Senior Circuit Judge:

The United States Army Corps of Engineers in 1988 granted a permit under section 404(b) of the Clean Water Act, 33 U.S.C. §§1251 - 1387, to James City County, Virginia, to construct a dam and reservoir across Ware Creek located within the County. The Environmental Protection Agency ("EPA") "vetoed" the permit under the authority granted it by section

404(c) of the Clean Water Act, 33 U.S.C. § 1344(c). After the County contested that action in the district court, the court granted it summary judgment and ordered the Corps of Engineers to issue the permit. *James City County v. EPA*, 758 F. Supp. 238 (E. D. Va. 1990). In a previous appeal, we affirmed the district court's holding that there was not substantial evidence to support the EPA's finding in its final determination that the County had practicable alternatives to building the Ware Creek reservoir for its local water supply, but remanded to the EPA to afford it the opportunity to decide whether environmental considerations alone would justify its veto. *James City County v. EPA*, 955 F.2d 254 (4th Cir. 1992) (*"JCC I"*). We instructed the EPA not to revisit the issue of practicable alternatives.

On remand, the EPA considered its administrative record and again vetoed the § 404(b) permit–basing its veto solely on environmental considerations. The County again brought an action in the district court, which again granted summary judgment and ordered issuance of the permit. *James City County v. EPA*, No. 89 156-NN (E.D. Va. 1992). The EPA now appeals that judgment to this court. We reverse.

We consider the same fact which we considered in *JCC I* but in the context of the issues framed by the EPA's new final determination and the district court's decision after remand. No purpose will be served by repeating the area's detailed water needs discussed in our earlier opinion. Suffice it to say that the present water supplies for all of the political entities in Virginia's Lower Peninsula are rapidly becoming inadequate. Plans for development of the Ware Creek reservoir designed as a project to supply only the needs of James City County have been underway since at least 1982. We discussed in *JCC I* the statutory and regulatory frame controlling the issuance of the involved permit. The issues presented to us in this second appeal, however, come in a somewhat unusual posture so it will

be useful to again review the statute and regulations which guide our considerations.

I

The stated objective of the Clean Water Act is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. § 1251(a). A review of the statue and legislative history reflects that Congress' intention in enacting the Clean Water Act was focusing on remedying the cumulative industrial and institutional practices that have spoiled much of the Nation's waters, and its concern was assuring high quality in our waters. *See* S. Rep. No. 1236, 92d Cong., 2d Sess. 99-100 (1972) (conference report explaining that in § 101 of the Clean Water Act, 33 U.S.C. § 1251, congressional intent was to eliminate pollutant discharge, restore chemical, physical, and biological integrity of the Nation's waters, set water quality goals, prohibit toxic discharges, and develop waste treatment projects and plans), *reprinted in* 1 *Legislative History of the Federal Water Pollution Control Act Amendments of 1972,* at 282-83 (1973).

This comprehensive act covers the broad spectrum of pollution caused by our varied and complex way of life. Specific provisions cover building and operation of treatment plants directed to process wastewater from industrial facilities, toxic pollution, many varieties of nontoxic pollution, and the like. *See, e.g.*, 33 U.S.C. §§ 1311 (effluent limitations); 33 U.S.C. § 1317 (1988) (toxic and pretreatment effluent standards); 33 U.S.C. § 1321 (oil and hazardous substance liability); 33 U.S.C. § 1322 (marine sanitation devices). Section 404 of the Act, 33 U.S.C. § 1344, relates narrowly to the placement of dredged or fill material into the Nation's waters. It is this section which covers the issuance of permits for the construction of reservoirs by damming streams, and it is the statutory provision upon which

this appeal is centered. It provides, in relevant part:

§ 1344 Permits for dredged or fill material

(a) Discharge into navigable waters at specified disposal sites

The Secretary [of the Army of the Corps of Engineers] may issue permits, after notice and opportunity for public hearings for the discharge of dredged or fill material into the navigable waters at specified disposal sites....

(b) Specification for disposal sites

Subject to subsection (c) of this section, each such disposal site shall be specified for each such permit by the Secretary(1) through the application of guidelines developed by the Administrator [of the EPA], in conjunction with the Secretary....

(c) Denial or restriction of use of defined areas as disposal sites

The Administrator [of the EPA] is authorized to prohibit the specification (including the withdrawal of specification) of any defined area as a disposal site, and he is authorized to deny or restrict the use of any defined area for specification (including the withdrawal of specification) as a disposal site, whenever he determines, after notice and opportunity for public hearings, that the discharge of such materials into such area will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas. Before making such determination, the Administrator shall consult with the Secretary. The Admin-

> istrator shall set forth in writing and make public his findings and his reasons for making an determination under this subsection.

Pursuant to the mandate of section 404(b), the EPA and the Corps have jointly issued guidelines to be followed by both agencies in making their respective determinations under section 404. *See* 40 C.F.R. § 230. These guidelines state that a permit should not be issued if:

> (1) practicable, environmentally superior alternatives are available, (2) the discharge would result in a violation of various environmental laws, (3) the discharge would result in significant degradation to the waters of the United States, or (4) appropriate and practicable steps have not been taken to minimize potential adverse impacts of the proposed discharge.

JCC I, 955 F.2d at 257 (summarizing 40 C.F.R. § 230.10(a)-(d)).

In addition to the guidelines issued jointly by the EPA and the Corps of Engineers, the EPA has issued regulations, which, among other things, define "unacceptable adverse effect" as "impact on an aquatic or wetland ecosystem which is likely to result in significant degradation of municipal water supplies (including surface or groundwater) or significant loss of or damage to fisheries, shellfishing, or wildlife habitat or recreation areas." 40 C.F.R. § 231.2(e). These regulations also provide that "[i]n evaluating the unacceptability of such impacts, consideration should be given to the relevant portions of the section 404(b)(1) guidelines." *Id.*

In *JCC I*, the County applied for and the Corps of Engineers granted the permit at issue in this appeal. The permit would allow the construction of a water reservoir by the erec-

tion of a dam across Ware Creek, a tributary of the York River, which, in turn, flows into the Chesapeake Bay. In its final determination of whether to veto the permit, the EPA discussed in detail its opinion that construction of the dam would have "unacceptable adverse effects" on municipal water supplies, fish, wildlife, and recreational areas such as are prohibited by section 404(c) of the Act, 33 U.S.C. § 1344(c). It determined, among other things, that the construction would have a damaging impact on environmental contributions to the York River and to the Chesapeake Bay. In its conclusion to its first final determination, however, the EPA added a statement that resulted in the district court ruling against it in the first action:

> [i]n addition, the record reveals that there are practicable, less environmentally damaging alternatives that are available to James City County that would provide sufficient water supplies for its projected local needs. EPA therefore concludes that construction of the proposed Ware Creek impoundment would result in unacceptable adverse effects to wildlife.

In *JCC I,* the district court concluded that the EPA's finding of unacceptable adverse effects was based on its factual conclusion that there were practical alternatives for the County's water needs that would be "less environmentally damaging." It found that there was no evidence to support a finding that practical alternatives were available to the County and, in effect, overturned the EPA's veto–ordering the County to issue the permit. On appeal, we agreed with the district court that the EPA's finding of local practical alternatives was not adequately supported by the record and affirmed that part of the district court's opinion. The EPA's primary argument in the first appeal, however, was that the district court should have remanded the case to it so that it could consider and clearly articulate whether the project's environmental effects alone justified a veto. We agreed, affirming in part, but remanding to afford the

agency the opportunity for the further consideration it sought. *Id. See Vermont Yankee Nuclear Corp. v. Natural Resources Defense Council,* 435 U.S. 519, 524-25 (1978). Since we felt that the record conclusively showed that there were not practical alternatives to the Ware Creek project as a *local* project and that the EPA had full opportunity to develop that issue, we instructed the EPA not to "revisit" it.

The EPA, in the initial determination considered in *JCC I*, had dwelled for considerable lengths both on the supply and environmental advantages of a regional water supply as opposed to the Ware Creek project which was designed to supply, at most, the water needs of two small counties. It also discussed the obstacles to a regional system posed by the lack of cooperation between the affected communities in Virginia's Lower Peninsula, and between the State of Virginia and the communities. The EPA made clear its position that it would consider differently a regional Ware Creek project or a regional project for impounding the water of other streams in the area.[1]

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[1] After James City County began developing its plan for Ware Creek, parallel and competing plans were crafted for a regional water supply system to service virtually all of the Lower Peninsula region, including James City County. No single regional plan has advanced to a permitting stage, so none has been considered formally by the EPA. The County, however, complained on appeal in *JCC I* and repeats its complaint in this appeal, that the EPA's veto was an attempt to coerce it into accepting water from a yet-to-be designed regional water source.

Whether the region's future water needs will be met through regional or local supplies has been a source of controversy in the Lower Peninsula. There is considerable comment in the administrative record to the effect that while James City County prefers the local approach it now persues, other politcal entities in the area prefer the regional approach. Since 1987, for example, when representatives from Newport News, Williamsburg, and York County formed the Regional Raw Water Study Group (RRWSG), local governments have analyzed options for construct-

(Continued on next page)

The EPA read our instructions in *JCC I* rather narrowly. Although we instructed the agency not to revisit the issue of practical alternatives, this was related to the alternatives discussed in the first determination and was based on our view that an agency failing to meet its evidentiary burden in these circumstances was not entitled to a "second bite of the apple." In any event, in this appeal, we are faced with a somewhat different problem than the one presented in the first appeal. In its Final Determination After Remand, the EPA, of the view that our remand required it, deleted the discussion of a putative regional water supply and concluded that its veto was justified solely on the basis of unacceptable adverse effects on the environment. The district court, in ruling for the County, held that the EPA lacked the authority to base its veto solely on the grounds of adverse effects to the environment. It opined that the agency must consider the County's need for water. Alternatively, the district court ruled that there was not sufficient evidence to support the EPA's conclusion of unacceptable adverse environmental effects.

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ing facilities to supply water to the entire region. Although James City County initially declined to participate in this study group, it joined after the EPA first vetoed the Ware Creek project, apparently showing a willingness to consider a regional approach despite its preference for a local solution to its water needs.

RRWSG has narrowed its focus to three reservoir proposals–a Black Creek Reservoir, a King William Reservoir, and an expanded Ware Creek Reservoir. Record material presented by the group's representatives indicates that the King William and Black Creek proposals would produce considerably more water at less environmental cost than would the Ware Creek Reservoir. Although the EPA has denied expressing a preference, the amici in this appeal urge that one regional dam chosen from these alternatives would provide considerably more water with much less adverse environmental consequences than parallel local ones.

It may have been better had the EPA discussed the County's need for water and its earlier articulated opinion that the controversy was not so much about the need for water as the way in which it was to be provided, i.e., by local or regional approach. We are constrained, however, by the familiar principle of *SEC v. Chenery Corp.*, 332 U.S. 194, 196 (1947), that the propriety of an agency's action can only be judged on the grounds on which it rests its actions. We are presented then with the chore of determining whether the EPA has the authority to justify its § 404(c) veto in this case solely on the basis that it would cause unacceptable adverse effects on the environment. Although we find no precedent and little legislative history, we are persuaded by the structure and language of the Act that it has that authority.

II

The district court, in ruling that the EPA erred in not discussing the County's need for water, cited 40 C.F.R. § 231.1(a) which defines the "purpose and scope" of Part 231 relating to procedures and directs that the EPA consider "all information available to [it]."

On appeal, the County does not rely primarily on the district court's reasoning, but argues that the EPA derives its authority to consider the County's water needs from statutory language. It focuses on the key proscriptive phrase used by Congress "unacceptable adverse effects" and urges that the EPA is required to consider a wide range of factors in determining what is "unacceptable." It points out that the EPA's position in other litigation has been grounded on this same argument. The EPA, in reply, asserts that while it may in its sole discretion consider the need for water, the only requirement placed on it by Congress is to consider the project's potential adverse impacts on the environment. In support of its argument, the agency points to the preamble to 40 C.F.R. Part 231:

> [S]ection 404(c) does not require a balancing of environmental benefits against non-environmental costs such as the benefits of the foregone project. This view is based on the language of 404(c) which refers only to environmental factors. The term "unacceptable" in EPA's view refers to the significance of the adverse effect–e.g. is it a large impact an is it one that the aquatic and wetland ecosystem cannot afford.
>
> ...[E]ven when there is no alternative available, and "vetoing" the site means stopping a project entirely, the loss of the 404(c) resource may still be so great as to be "unacceptable."

44 Fed. Reg. 58,076, 58,078 (Oct. 9, 1979).

The County does not seriously contest the EPA's interpretation negating a cost/benefit analysis. It forcefully contends, however, that before imposing a veto some consideration must be given to a community's need for water and emphasizes that this does not require a cost/benefit analysis. It correctly points out that in *JCC I,* relying on the legislative history of the Clean Water Act and the preamble to tis own regulations implementing that act, the EPA took the position in the district court that "the 'acceptability' of adverse [environmental] effects can best be evaluated in light of all relevant factors, including such concerns as the availability of alternatives." The EPA asserted that this had been a long-standing agency policy.

Congress obviously intended the Corps of Engineers in the initial permitting process to consider the total range of factors bearing on the necessity or desirability of building a dam in the Nation's waters, including whether the project was in the public interest. For example, as stated earlier, under 40 C.F.R. §230.10, in deciding whether to issue a permit, the Corps takes into account the availability of practicable alternatives to the

proposed project, whether the proposed discharge would violate environmental laws or significantly degrade national waters, and whether adequate measures are taken to minimize harmful effects. In addition to these environmentally-based criteria, the Corps conducts a "public interest review" which, inter alia, takes into account the public and private need for the project, whether the same result could be achieved through other means, and the "extent and permanence" of the benefits and harms the proposed project is likely to produce. 33 C.F.R. § 320.4(a). Ultimately, however, recognizing the EPA's expertise and concentrated concern with environmental matters, Congress gave the final decision whether to permit a project to that agency. Its authority to veto to protect the environment is practically unadorned. It is simply directed to veto when it finds that the discharge "will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas." *See* 118 Cong. Rec. 33,699 (1972) (senate debate explaining that under § 404 EPA should not issue a permit if project will adversely affect the listed resources), *reprinted in* 1 *Legislative History of the Federal Water Pollution Control Act Amendments of 1972,* at 177 (1973); *see also* S. Rep. No. 1236, 92d Cong., 2d Sess. 142 (1972) (conference committee report explaining that § 404 grants EPA the power to veto project that will adversely affect the listed resources), *reprinted in* 1 *Legislative History of the Federal Water Pollution Control Act Amendments of 1972,* at 325 (1973). This broad grant of power to the EPA focuses only on the agency's assigned function of assuring pure water and is consistent with the missions assigned to it throughout the Clean Water Act.

We think it significant that the only mention of responsibility for the quantities of water available to communities is contained in section 101(g) entitled "Authority of States over water" which states:

> It is the policy of Congress that the authority of each State to allocate quantities of water within its jurisdiction shall not be superseded, abrogated or otherwise impaired by this chapter. It is the further policy of Congress that nothing in this chapter shall be construed to supersede or arrogate rights to quantities of water which have been established by any State. Federal agencies shall co-operate with State and local agencies to develop comprehensive solutions to prevent, reduce and eliminate pollution in concert with programs for managing water resources.

33 U.S.C. § 1251(g).

In our view, the EPA's only function relating to the quantities of available water is limited to assuring purity in whatever quantities the state and local agencies provide. For these reasons, we think its veto based solely on environmental harms was proper.

III

Having found that, in this case, the EPA could consider whether adverse environmental effects alone justified a veto, we now review the district court's alternate holding that the factual conclusion of unacceptable adverse effects was not supported by the record. In its Final Determination After Remand, the EPA analyzed the proposed project's adverse impacts on wildlife, recreational and commercial fisheries, and recreation in the Ware Creek watershed, as well as the project's impacts outside of the general vicinity. The agency also considered James City County's mitigation plan. It then concluded that the adverse environmental effects of the project were unacceptable and reasserted its earlier veto.

The EPA noted that construction of the reservoir would

result in the loss of 381 acres of vegetated wetlands, forty-four acres of palustrine (related to marshes), estuarine (related to estuaries), or lacustrine (related to lakes) open water systems, and 792 acres of adjacent forested uplands habitat. Some of the short-term effects of the construction of the project would be the loss of small animals and invertebrates that could not escape the construction site and the destruction of over half the vegetated wetland cover-type habitat. Reptile and amphibian populations in the watershed would be harmed by the destruction of overall habitat and particularly breeding habitat. The EPA also found that by blocking the Ware Creek's flow, the project "would severely and adversely alter the current nutrient regime," which transports organic material into the York River and ultimately into the Chesapeake Bay. In discussing the cumulative adverse environmental impact on the Bay to which the Ware Creek project would contribute, the EPA noted "[t]he incremental loss of functional wetland systems which currently contribute to the environmental well being of the York River and the Chesapeake Bay and which help maintain and protect the environmental integrity of those systems represents a profound cumulative loss."

Although the EPA recognized that the proposed reservoir would increase greatly the freshwater habitat, the agency found that the dam would harm fish species currently living in the Ware Creek watershed because it would convert the vegetated flowing stream system into a lake, possibly resulting in the eventual elimination of some stream species of fish. Also, the likely introduction of forage and game fish into the reservoir by the Virginia Department of Game and Inland Fisheries could alter the abundance and diversity of the current fish populations. Furthermore, construction of the dam, in the EPA's view, would destroy a valuable Great Blue Heron rookery and would eliminate favorable habitat for foraging species such as the Black Duck.

The EPA considered and discussed the County's mitigation plan. The plan includes wetlands creation, wetlands and uplands preservation, creation of potential Great Blue Heron nesting sites in Ware Creek (within the York River watershed), and removal of an existing dam in another watershed. Based on its review of the administrative record, however, the EPA concluded that the proposed mitigation plan would not adequately offset the adverse effects resulting from the local project. For instance, the more that 1600 acres marked for preservation are in another watershed and, for that matter, are already subject to EPA protection. The EPA also considered that less that fifty percent of the vegetated wetlands would be replaced by newly-created wetlands, even if the plan is completely successful.[2] Moreover, the EPA found that the mitigation plan would not adequately replace the types and qualities of wetlands the proposed project would destroy.[3] The lack of knowledge about the habitat needs of the Great Blue Heron also led the agency to decide that it could not assume that the mitigation efforts for the rookery would be successful. Accordingly, the EPA reached the following conclusions about James City County's mitigation plan:

> Upon reevaluation of the administrative record, EPA finds that the mitigation plan as proposed by James City County does not adequately offset adverse impacts to aquatic resources resulting from project implementation. EPA finds that the post-project reservoir system in conjunction with preservation and compensatory mitigation efforts proposed by the County would not adequately replace or compensate for the loss of or im-

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[2]The EPA generally grants mitigation credit only in exceptional circumstances and where the mitigation is undertaken in the same watershed.

[3]As amici explain, different types of wetlands serve different functions, such as providing habitat or filtration or recharging aquifers.

pacts to aquatic resource functions and values associated with the current Ware Creek wetlands and aquatic ecosystem. EPA therefore concludes that the mitigation proposed by James City County does not render the project acceptable under Section 404(c).

In the district court, the County contended and the district court held that the environmental data in the administrative record failed to provide substantial support for the EPA's position.[4] The court held primarily that the agency failed to

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[4]Following our holding in *JCC I*, the district court applied the substantial evidence standard of review. On this appeal, the EPA asks us to reconsider our holding that we review the EPA's § 404(c) veto decision under that standard. As we stated in *JCC I*, the choice of review standard does not effect our decision on the merits because EPA's determination satisfies both the substantial evidence and arbitrary and capricious standards. The same is true on this appeal.

On mature reconsideration, however, we conclude that agency action under § 404 is reviewable under the arbitrary and capricious standard. Under 5 U.S.C. § 706(2)(E), the substantial evidence standard applies to cases "reviewed on the record of an agency hearing provided by statute." Examining the language of § 404(c) under this requirement, it is apparent that the EPA's determination is not required to be made on the record of a hearing, but rather must be made "after notice and opportunity for public hearings." 33 U.S.C. § 1344(c). Our conclusion that § 706(2)(E) does not apply to § 404(c) determinations is supported by dicta in *Citizens to Preserve Overton Park v. Volpe*, 401 U.S. 402 (1971), where the Supreme Court stated that the substantial evidence review standard applies only to agency rulemaking "or when the agency action is based on a public adjudicatory hearing." *Id.* at 414. In applying the arbitrary and capricious standard of review, we apply the same standard used by other circuits reviewing § 404 actions. *See Bersani v. Robichaud*, 850 F.2d 36, 46 (2d Cir. 1988), *cert./denied*, 489 U.S. 1089) (applying arbitrary and capricious standard to EPA's § 404(c) determination). *See also Town of Norfolk v. United States Army Corps of Engineers*, 968 F.2d 1438, 1445 (1st Cir. 1992) (reviewing Corps' § 404 permit decision under arbitrary and capricious standard); *Holy Cross*

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consider the County's mitigation plan to limit environmental damage. It held that the agency miscalculated the net loss of wetlands and the harm to fish and wildlife, and disregarded the inevitable development of the area around Ware Creek, with or without the proposed project. In our view the district court

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Wilderness Fund v. Madigan, 960 F.2d 1515, 1521 (10th Cir. 1992) (same); *Sierra Club v. United States Army Corps of Engineers*, 701 F.2d 1011, 1032 (2d Cir. 1983) (same).

The Supreme Court explained the arbitrary and capricious review standart in *Motor Vehicle Mfrs. Ass'n of the United States, Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29 (1983):

> The scope of review under the "arbitrary and capricious" standard is narrow and a court is not to substitute is judgment for that of the agency. Nevertheless, the agency must examine the relevant data and articulate a satisfactory explanation for its action including a "rational connection between the facts found and the choice made." ... In reviewing that explanation, we must "consider whether the decision was based on a consideration of the relevant factors and whether there has been a clear error of judgment." ... Normally, an agency rule would be arbitrary and capricious if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for this decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.

Id. at 43 (citations omitted). Under the substantial evidence standard, an agency ruling must be upheld if there is substantial evidence to support it. "Substantial evidence is 'such evidence as a reasonable mind might accept as adequate to support a conclusion." ... While this Court must review the entire record, we may neither redetermine the facts nor substitute our own judgment for that of the [agency]." *Harris v. Director, Office of Workers' Compensation Programs*, 3 F.3d 103, 106 (4th Cir. 1993). It is widely held that there is now little difference in the application of the two standards. *See* Kenneth Culp Davis, 5 Administrative Law Treatise § 29:7 (1984); Matthew J. McGrath, Note, *Convergence of the Substantial Evidence and Arbitrary and Capricious Standards of Review During Informal Rulemaking*, 54 Geo. Wash. L. Rev. 541 (1986).

erred in failing to recognize the deference due the EPA's determination.

The court disputed the EPA's calculation of projected wetlands loss from the proposed project,[5] finding that after reducing the projected lost wetlands acreage by the number of wetlands acres to be created by the dam and the breaching of dam in another water shed, and giving credit for mitigation efforts, the net loss was "almost zero." In doing so, the court disregarded the EPA's technical expertise and calculated the wetlands replacement based on raw numbers. However, as discussed above, the EPA took into account whether the replacement wetlands were of the same value and quality as the lost wetlands. The district court also faulted the agency for failing to accord "mitigation credit" for the 1600+ acres set aside for protection in another watershed. The agency's action, however, was consistent with its policy of applying mitigation credit in exceptional circumstances and in the same watershed.

The district court noted that the project would increase habitat for freshwater fish, that the mitigation plan would breach a dam in another watershed thereby benefiting anadramous fish, and that the dislocation of the Great Blue Heron and other migratory birds would be only temporary because they could find new rookery areas. Although EPA conceded that freshwater habitat would expand from the project and that the breached dam would help anadramous fish, the administrative record supports its conclusion that the project nevertheless would cause significant harm. The record also supports the EPA's finding that insufficient data on the Great Blue Heron

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[5] The district court found that the EPA claimed a potential loss of 425 acres of wetlands. In fact, the Final Determination After Remand states that the project would destroy 381 acres of wetlands and 44 acres of palustrine, estuarine, or lacustrine open water systems.

prevents a conclusion that replacement rookeries will adequately mitigate the harm from the destroyed rookery.

Finally, the court noted that the EPA had overloaded the extent of development that would occur around the wetland area if the dam was not built, noting that the Chesapeake Corporation, the company owning much of the land in the area, was committed to harvesting timber and developing the area for residential and other uses. After reviewing the administrative record, however, the EPA concluded that the record did not support a finding that development of the Ware Creek watershed would be more environmentally damaging without the project. The EPA noted that the Chesapeake Corporation's plans for the area were uncertain. While it is possible that the company will engage in timbering and development activities if the reservoir is not constructed, the record also shows that the company has considered including "buffer zones, storm water management ponds and wetland areas to protect the Ware Creek watershed."

The EPA based its veto decision on several factors, including harm to existing fish and wildlife species, damage to the ecosystem, destruction of wetlands, and inadequate mitigation. Its findings are supported by the administrative record, are not arbitrary and capricious, and for that matter, are supported by substantial evidence. Consequently, the judgment of the district court is reversed.

REVERSED

APPENDIX J

FILED: March 25, 1994

UNITED STATES COURT OF APPEALS
FOR THE FOURTH CIRCUIT

No. 92-2294
(CA) 89-156-NN

JAMES CITY COUNTY, VIRGINIA,
Plaintiff - Appellee,

versus

ENVIRONMENTAL PROTECTION AGENCY;
UNITED STATES ARMY CORPS OF ENGINEERS,
Defendants - Appellants.

SOUTHERN ENVIRONMENTAL LAW CENTER; VIRGINIA WILDLIFE FEDERATION; NATIONAL WILDLIFE FEDERATION; CHESAPEAKE BAY FOUNDATION,

Amici Curiae

ORDER

Appellee has filed a petition for rehearing with a suggestion for rehearing in banc and appellants filed an answer to the petition. A member of the Court requested a poll on the suggestion for rehearing in banc, and a majority of the judges voted to deny rehearing in banc. Judges Widener and Niemeyer voted to rehear the case in banc. Chief Judge Ervin and Judges Russell, Hall, Phillips, Murnaghan, Wilkinson, Wilkins, Hamilton, Luttig,

Williams, Michael and Senior Judge Sprouse voted against rehearing in banc.

The original judicial panel voted to deny the petition for rehearing.

The Court denies the petition for rehearing with suggestion for rehearing in banc.

Entered at the direction of Senior Judge Sprouse for the Court.

For the Court

/s/ Bert M. Montague
Clerk

APPENDIX K

CLEAN WATER ACT

Section 301(a)
(33 U.S.C. § 1331(a))

(a) Illegality of pollutant discharges except in compliance with law

Except as in compliance with this section and sections 1312, 1316, 1317, 1328, 1342, and 1344 of this title, the discharge of any pollutant by any person shall be unlawful.

Section 401(a)(1)
(33 U.S.C. § 1341(a)(1))

(a) Compliance with applicable requirements; application; procedures; license suspension

(1) Any applicant for a Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the State in which the discharge originates or will originate, or, if appropriate, from the interstate water pollution control agency having jurisdiction over the navigable waters at the point where the discharge originates or will originate, that any such discharge will comply with the applicable provisions of sections 1311, 1312, 1313, 1316, and 1317 of this title. In the case of any such activity for which there is not an applicable effluent limitation or other limitation under sections 1311(b) and 1312 of this title, and there is not an applicable standard under sections 1316 and 1317 of this title, the State shall so certify, except that any such certification shall not be deemed to satisfy section 1371(c) of this title. Such State or interstate agency shall establish procedures for public notice in the case of all applications for certification by it and, to the extent it deems appropri-

ate, procedures for public hearings in connection with specific applications. In any case, where a State or interstate agency has no authority to give such a certification, such certification shall be from the Administrator. If the State, interstate agency, or Administrator, as the case may be, fails or refuses to act on a request for certification, within a reasonable period of time (which shall not exceed one year) after receipt of such request, the certification requirements of this subsection shall be waived with respect to such Federal application. No license or permit shall be granted until the certification required by this section has been obtained or has been waived as provided in the preceding sentence. No license or permit shall be granted if certification has been denied by the State, interstate agency, or the Administrator, as the case may be.

Section 404(a)-(d)
(33 U.S.C. 1344(a)-(d)

(a) Discharge into navigable waters at specified disposal sites

The Secretary may issue permits, after notice and opportunity for public hearings for the discharge of dredged or fill material into the navigable waters at specified disposal sites. Not later than the fifteenth day after the date an applicant submits all the information required to complete an application for a permit under this subsection, the Secretary shall publish the notice required by this subsection.

(b) Specification for disposal sites

Subject to subsection (c) of this section, each such disposal site shall be specified for each such permit by the Secretary (1) through the application of guidelines developed by the Administrator, in conjunction with the Secretary, which guidelines shall be based upon criteria comparable to the criteria applicable to the territorial seas, the contiguous zone, and the ocean under section 1343(c) of this title, and (2) in any case where such guidelines

under clause (1) alone would prohibit the specification of a site, through the application additionally of the economic impact of the site on navigation and anchorage.

(c) Denial or restriction of use of defined areas as disposal sites

The Administrator is authorized to prohibit the specification (including the withdrawal of specification) of any defined area as a disposal site, and he is authorized to deny or restrict the use of any defined area for specification (including the withdrawal of specification) as a disposal site, whenever he determines, after notice and opportunity for public hearing, that the discharge of such materials into such area will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fisher areas (including spawning and breading areas), wildlife, or recreational areas. Before making such determination, the Administrator shall consult with the Secretary. The Administrator shall set forth in writing and make public his findings and his reasons for making any determination under this subsection.

(d) "Secretary" defined

The term "Secretary" as used in this section means the Secretary of the Army, acting through the Chief of Engineers.